

## UNIT

## 1

## Friction

**Lessons of the unit :**

1. Friction.
2. Applications of friction.

**Unit Objectives :** By the end of this unit, you will be able to :

- Identify the concept of friction.
- Give examples that clarify friction of objects moving through air and water.
- Explain the advantages and disadvantages of friction.
- Explain the importance of the streamline shapes of fish, aircrafts and rockets.
- Recognize the friction effect on the movement of objects.



## LESSON

## 1

## Friction

- When you slide down on a slide, there will be a touch (contact) between your body and the slide.
- When a car moves on a road, there will be a touch (contact) between the car tires and the road.
- When we rub our hands together, we feel warm.
- This touch between each two objects in the previous examples is a type of force known as "Friction force"



friction  
force  
rub

احتكاك  
قوة  
يدلك

contact (touch)  
slide  
car tires

تلامس  
يتزلق / زحليقة  
إطارات السيارة

دفن  
طريق



## Unit

1

**Friction force**

It is the force between two surfaces in contact that acts in a direction opposite to the direction of motion and causes the object to slow down and stop.

There are different types of friction such as :

Friction between  
solid objects

Friction between  
objects and air

Friction between  
objects and water

**Friction between solid objects**

**Activities** To show the friction force between solids.

A

Steps	Figures	Observations
Let a small rubber ball roll on : a. The sandy floor of the playground.	<p>Sandy floor</p> <p>Direction of friction</p> <p>Direction of movement</p>	a. On the sandy floor, the rubber ball stops moving after a short time.
b. The smooth floor of the classroom.	<p>Smooth floor</p> <p>Direction of friction</p> <p>Direction of movement</p>	b. On the smooth floor, the rubber ball stops moving after a long time.

movement

act

solid

opposite direction

الحركة

يعمل

صلبة

اتجاه معاكس

sandy floor

rubber ball

playground

أرض رملية

كرة من المطاط

ملعب

roll on

smooth floor

slow down

تندرج على

أرض ملساء

تبطئ



## LESSON 1

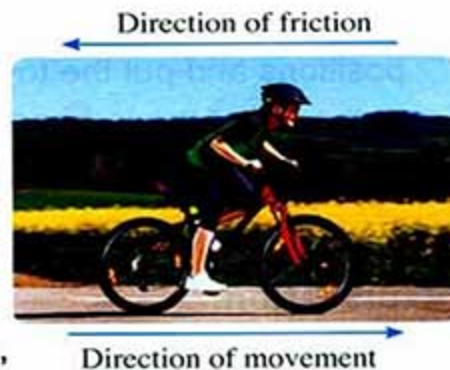
## B

## Steps:

1. Ride a bike and push its pedal.
2. Stop pedalling during the movement of the bike.

## Observation:

The bike continues moving in the same direction, but its speed decreases gradually until it stops.



## Explanation:

- When the bike tires touch the road, the friction force arises that acts in the opposite direction of the movement.
- When you stop pedalling during the movement of the bike, the friction force increases, so the bike slows down until it stops.

## C

## Materials:

A smooth wooden board – some books – a car toy.

Steps	Figures	Observations
1. Form an inclined (sloping) wooden board as shown in figure (a), then take off the wheels of the toy and put the toy at the top of the inclined surface.	<p>A car toy</p> <p>A sloping wooden board</p> <p>Fig. (a)</p>	1. The toy doesn't slide down.
2. Increase the slope of the wooden board as in figure (b), then put the toy without wheels at its top again.	<p>Direction of movement</p> <p>Direction of friction force</p> <p>Fig. (b)</p>	2. The toy slides down to a small distance.

stop pedalling  
arises

إيقاف التبدیل  
بنشأ

sloping / inclined  
continues moving

مانل  
يستمر متحركاً

wooden board  
wheels

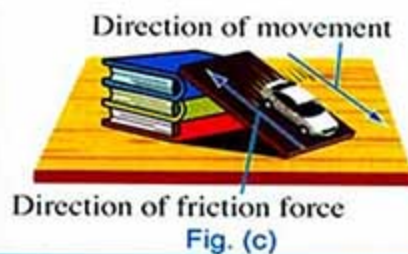
لوح خشبي  
عجلات



## Unit

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3. Fix the toy wheels in their positions and put the toy at the top of the inclined board as in figure (c).



3. The toy slides down to a longer distance.

## Explanation:

- When the car toy touches the wooden board, the friction force arises, where :
- In step ①, the friction force between the toy without wheels and the wooden board is **larger than** the movement force, so the toy doesn't move.
- In step ②, the friction force is **smaller than** the movement force, so **the toy without wheels** slides down to a short distance.
- In step ③, the friction force in case of the toy moving down on wheels is less than that when sliding down without wheels, so the car toy slides down to a longer distance.
- Generally, the direction of the friction force is **upwards**, while the direction of the movement is **downwards**.

## General conclusion:

- Friction force arises when two surfaces touch each other.
- The direction of the friction force is **opposite to** the direction of the movement.
- Friction force is the reason for stopping the body during motion.
- When the friction force is **larger than** the movement force, the body doesn't move and vice versa.

## G.R.

## Slowing down or stopping the body during its motion.

Due to the friction force that acts in the opposite direction of the movement.

slide down  
surface area

يتزلق  
مساحة السطح upwards

لأعلى  
downwards  
vice versa

لأسفل  
بالعكس



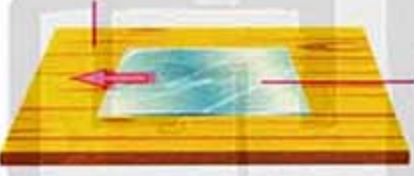
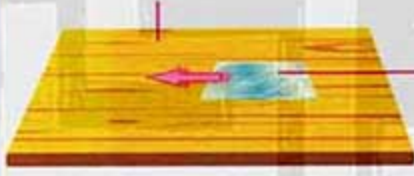
## LESSON 1

## The factors affecting the friction force

- 1 The surface area of the moving object.
- 2 The type of the surface material.
- 3 The speed of the body.

## 1 The surface area of the moving object

- There is a **direct relation** between the surface area of the moving object and the friction force.

Large surface area	Small surface area
By <b>increasing</b> the surface area, the friction force <b>increases</b> .	By <b>decreasing</b> the surface area, the friction force <b>decreases</b> .
 <p>Wooden board</p> <p>Large piece of glass</p>	 <p>Wooden board</p> <p>Small piece of glass</p>

G.R.

**There is a direct relation between the surface area of the moving object and the friction force.**

Because by increasing the surface area of the moving object, the friction force increases and vice versa.

## Exercise

Put (✓) or (×) :

1. There is a direct relation between the surface area of the moving object and the friction force. ( )
2. Friction force increases by increasing the surface area of moving objects. ( )

material

مادة

type

direct relation

النوع

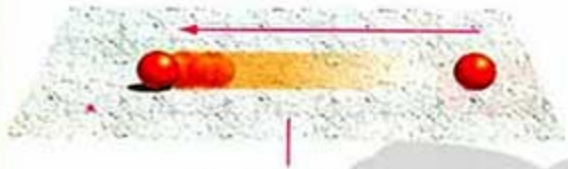
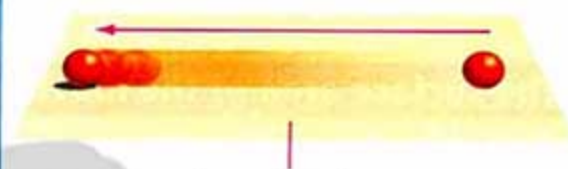
علاقة طردية



## Unit

1

## 2 The type of the surface material

Rough surface	Smooth surface
The friction force <b>increases</b> between <b>rough surfaces</b> .	The friction force <b>decreases</b> between <b>smooth surfaces</b> .
	
Rough surface	Smooth surface

## Activity

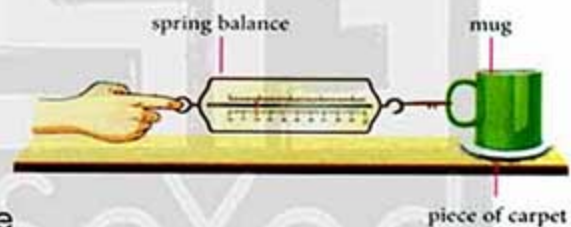
To prove that the friction force depends on the type of the surface material.

## Materials:

A mug – a spring balance – pieces of carpet, cardboard and silk – a sticky tape – a table.

## Steps:

1. Fix the piece of carpet at the mug base using the sticky tape.
2. Fix the hook of the spring balance to the mug handle.
3. Try to pull the mug by the spring balance at constant speed.
4. Notice the reading of the spring scale.
5. Replace the piece of carpet at the mug base once with the piece of cardboard and another time with the piece of silk and repeat the previous steps.
6. Notice the reading of the spring balance each time.



## Observation:

The spring balance gives a different reading for each material (carpet, cardboard and silk).

## Conclusion :

Friction force depends on the type of surface material, where it **increases** between **rough surfaces** and **decreases** between **smooth surfaces**.

rough

spring balance

carpet

خشن smooth

ميزان زنبركي sticky tape

موكيت / سجادة base

ناعم

شريط لاصق

قاعدة





## Exercise

Complete the following sentences:

1. Factors affecting the friction force are : the type of surface material, ..... and .....
2. Friction force increases by ..... the surface area of the moving object.
3. Friction force ..... between rough surfaces and decreases between ..... surfaces.

## 3 The speed of the body

- There is a **direct relation** between the speed of a moving body and the friction force.

Slow object (low speed)	Fast object (high speed)
By decreasing the speed of an object, the <b>friction force decreases</b> .	By increasing the speed of an object, the <b>friction force increases</b> .
	

## Friction between solid objects and air

Before studying this type of friction, we must know, what the friction between solid objects and air is.

- When a solid object moves in air, a **friction force** arises between the object and air.
- This type of friction is called "**air resistance**" and it acts in the **opposite direction** of the body movement.



slow  
air resistance

fast  
مقاومة الهواء

سريع



## Unit

1

**Air resistance**

It is a type of friction force resulting from the movement of an object through air.

The direction of air resistance acts in the **opposite direction** of the movement of an object through air.

**The factors affecting air resistance**

Air resistance is affected by two factors, which are

1 *The speed (velocity) of the moving body.*

2 *The surface area of the moving body.*

**1 The speed (velocity) of the moving body**

- By **increasing the speed** of the body that moves through air, **air resistance increases** and vice versa.
- The relation between the speed of the body and air resistance is **direct relation**.

Examples :

1 When you run fast in open air.



2 When you ride a bicycle at a high speed.



3 When a car moves at a high speed.





## 2 The surface area of the moving body

- By increasing the surface area of the body that moves through air, air resistance increases and vice versa.
- The relation between the surface area of the body and air resistance is direct relation.



### Examples :

1

Trains, rockets, new cars and aircrafts are designed in streamline shapes. **G.R.**  
To decrease air resistance.



2

Birds have streamline shapes. **G.R.**  
To decrease air resistance.



3

Parachutist opens the parachute to land safely. **G.R.**  
To increase air resistance by increasing its surface area, so falling (landing) speed decreases.



4

Birds (or bat) stretch their wings on landing. **G.R.**  
To increase air resistance by increasing its surface area, so falling (landing) speed decreases.



Try to answer  
Test yourself **1**



## Friction between solid objects and water

Before studying this type of friction, we must know, what the friction between solid objects and water is.

- When any object moves through water (as fish and ship), a friction force arises between this object and water.
- This friction force is called "water resistance".



### Water resistance

It is a type of friction force resulting from the movement of an object through water.

The direction of water resistance acts in the opposite direction of the movement of an object through water.

### The factors affecting water resistance

Water resistance is affected by two factors, which are

1 The speed (velocity) of the moving body.

2 The surface area of the moving body.

#### 1 The speed (velocity) of the moving body

By increasing the speed of the body that moves through water, water resistance increases and vice versa (direct relation).

#### 2 The surface area of the moving body

By increasing the surface area of the body that moves through water, water resistance increases and vice versa (direct relation).




### Examples :

1

Fish (or dolphin) have streamline shapes. **G.R.**  
To decrease water resistance.



2

Ships are designed in streamline shapes.  To decrease water resistance.



## Question

*Complete the following sentences :*

1. Air resistance and water resistance act in the ..... direction of the moving objects through them.
2. Birds stretch their wings on landing to increase their ..... area, so the air resistance .....
3. Ships and fish have streamline shapes to decrease ..... resistance.

## Answers

1. opposite                      2. surface - increase                      3. water



Try to answer  
Test yourself **2**




## Remember

- **Friction force :** It is the force that exists between two surfaces in contact that acts in a direction opposite to the direction of motion and causes the object to slow down and stop.
- When the friction force is larger than the movement force, the body doesn't move and vice versa.
- **The factors affecting the friction force are :**
  1. The surface area of the moving object.
  2. The type of the surface material.
  3. The speed of the body.
- By increasing the surface area of the moving object, the friction force increases and vice versa.
- Friction increases between rough surfaces and decreases between smooth surfaces.
- Friction force increases by increasing the speed of the body and vice versa.
- **Air resistance :**  
It is a type of friction force resulting from the movement of an object through air.
- Trains, aircrafts, rockets, new cars and birds have streamline shapes to decrease the air resistance.
- **Water resistance :**  
It is a type of friction force resulting from the movement of an object through water.
- Ships, fish or dolphin have streamline shapes to decrease the water.
- Air resistance and water resistance increase by increasing the surface area and the speed of moving objects through them.






## Questions

Questions signed by  have been taken from the school book.

## on lesson one



## 1. Choose the correct answer :

- During skating on ice, a(an) ..... arises.  
a. friction force    b. movement force    c. electricity    d. (b) and (c)
- ..... slows down the moving object.  
a. Movement force    b. Heat energy    c. Friction force    d. Kinetic energy
-  Friction force acts in a direction ..... the direction of motion.  
a. opposite to    b. perpendicular to    c. parallel to    d. is the same
- The reason for moving the ball on the floor of your room for a longer time than on street is that .....  
a. the friction force between the ball and the street is larger than that between the ball and the floor.  
b. the friction force between the ball and the floor is equal to that between the ball and the street.  
c. the friction force between the ball and the floor is larger than that between the ball and the street.  
d. (a) and (b) are correct.
- There is a friction force between .....  
a. the bicycle's tire and the road.    b. the ball and the ground.  
c. two books touch each other.    d. all the previous answers.
- Sliding a body down over another body means that .....  
a. the friction force between the two bodies is larger than the movement force.  
b. the friction force between the two bodies is smaller than the movement force.  
c. the movement force between the two bodies is smaller than the friction force.  
d. no correct answer.
- Friction force depends on .....  
a. the type of the material surface only.  
b. the surface area of the moving object.  
c. the speed of the moving object.  
d. (a), (b) and (c).
- When the surface area of the moving object increases, the friction force .....  
a. increases.    b. decreases.  
c. doesn't change.    d. (a), (b) and (c).



## Unit

## 1

9. Friction between a small marble and ceramic is ..... that between a big marble and ceramic.  
a. larger than      b. smaller than      c. equal to      d. zero
10. Friction force increases .....  
a. by increasing the surface area of the moving object.  
b. between rough surfaces.  
c. between smooth surfaces.  
d. (a) and (b).
11. When the speed of the moving object increases, the friction force .....  
a. increases.      b. decreases.  
c. doesn't change.      d. (a), (b) and (c).
12. The stopping of a bike gradually during movement is due to the increase in .....  
a. the friction force.      b. the magnet.  
c. the attraction force.      d. all the previous answers.
13. The moving bike is affected by air resistance that acts ..... to its movement.  
a. in the perpendicular direction      b. in the opposite direction  
c. in the same direction      d. parallel
14. Air resistance increases when .....  
a. the car velocity decreases.      b. the car velocity increases.  
c. the car changes its direction.      d. the car doesn't move.
15. Modern cars are designed with streamline shapes to .....  
a. increase air resistance.      b. decrease water resistance.  
c. be attractive.      d. decrease air resistance.
16. Air resistance for a moving bicycle depends on .....  
a. the speed of the bicycle.      b. the surface area of the bicycle.  
c. the colour of the bicycle.      d. (a) and (b).
17. By increasing the surface area of a moving train, air resistance increases. This means that there is .....  
a. a direct relation between them.      b. an indirect relation between them.  
c. a curved relation between them.      d. no relation between them.
18. Rockets and aircrafts have streamline shapes .....  
a. to increase air resistance.      b. to decrease air resistance.  
c. to increase the surface area.      d. to decrease water resistance.



19. When the parachutist opens his parachute during landing, air resistance .....
- decreases.
  - increases.
  - doesn't exist.
  - remains constant.
20. Birds or bats stretch their wings on landing to .....
- increase their surface area.
  - increase the air resistance.
  - decrease their speed.
  - (a) , (b) and (c).
21. .... is the friction force resulting from the movement of any object through water.
- Air resistance
  - Magnetic force
  - Water resistance
  - Kinetic force
22. By decreasing the speed of the ship through water, water resistance .....
- increases.
  - decreases.
  - remains constant.
  - no correct answer.
23. Fish or dolphins have streamline shapes to .....
- reduce water resistance.
  - reduce their surface area.
  - increase water resistance.
  - (a) and (b).

**2. Put (✓) in front of the right statement and (✗) in front of the wrong one, then correct it :**

- ☐ The friction force is always in the same direction of the movement of the object. ( )
- ☐ Friction force between two surfaces during motion is greater than that during stopping. ( )
- Friction force is the reason for stopping any body during motion. ( )
- Friction force between a rubber ball and a sandy floor is smaller than that between the same ball and the classroom floor. ( )
- ☐ The pushing of an object forwards is opposed by a friction force at the same direction. ( )
- ☐ Friction force depends on the shape of the two touching objects. ( )
- By increasing the surface area of the moving object, the friction force decreases. ( )
- There is a direct relation between the surface area of the moving object and the friction force. ( )
- Friction force decreases between rough surfaces and increases between smooth surfaces. ( )



## Unit

## 1








10. Friction force depends only on the type of the material surface and the surface area of the moving object. ( )
11. There is a direct relation between the speed of the moving object and the friction force. ( )
12. 📖 Air resistance decreases when the car moves so fast. ( )
13. 📖 The relationship between the surface area of an object exposed to air and air resistance is an inverse relation. ( )
14. By increasing the bicycle speed, air resistance increases. ( )
15. Water resistance increases by increasing the surface area of the moving object. ( )
16. Birds and bats stretch their wings during landing to decrease air resistance. ( )
17. 📖 When the parachutist opens his parachute, air resistance decreases. ( )
18. 📖 Air resistance for objects that move at high speed can't be observed. ( )
19. The streamline shape of the ship increases water resistance. ( )
20. Air resistance is the friction force resulting from the movement of any object through water. ( )

### 3. Write the scientific term of each of the following :

1. 📖 The force that slows down the moving object and its effect is in the opposite direction of the object movement. ( ..... )
2. The force that arises between two surfaces when one of them slides over the other. ( ..... )
3. A force acts in the opposite direction to the movement force. ( ..... )
4. 📖 The friction force between air and the moving objects through it. ( ..... )
5. The force that opposes the movement direction of the parachutist. ( ..... )
6. The relation between the surface area of a moving body and air resistance. ( ..... )
7. It is the friction force resulting from the movement of any object through water. ( ..... )
8. A force opposes the motion of a boat in the river. ( ..... )
9. A force increases when the speed of the swimmer through water increases. ( ..... )



## 4. Complete the following statements :

1. When a body touches another body, a ..... arises.
2.  The force that slows down the objects' motion is called .....
3.  The effect of the friction force is in the ..... direction of the object's movement.
4. The reason for stopping a ball after pushing it on ground is .....
5. When a rubber ball touches a sandy floor, ..... arises.
6. Any body moves when ..... force is smaller than ..... force.
7. When you stop pedalling during the movement of the bike, its speed decreases gradually until it stops due to the effect of .....
8. .... and ..... are from the factors affecting the friction force.
9.  ..... increases by increasing the surface area of a moving object.
10. Friction force increases between ..... surfaces and ..... between smooth surfaces.
11.  The value of ..... between two surfaces depends on the type of material of both surfaces.
12.  The friction force between air and the object that moves through is called .....
13. Air resistance acts in ..... to the movement direction.
14. By increasing the speed of a car, air resistance .....
15. Air resistance ..... when the car or the bicycle moves slowly.
16. Rockets, ..... and ..... are designed in streamline shapes to .....
17. Birds and bats have ..... to decrease air resistance.
18. Parachutist opens the parachute and birds stretch their wings on landing to increase ..... that accordingly increases the .....
19. When a body moves through water, it is affected by .....
20.  The resistance of water is in a direction ..... to the direction of object's motion.
21.  The friction force between water and the object that moves through is called .....
22. The movement of fish or ships through water is in the opposite direction to the .....
23. .... and ..... are the factors affecting water resistance and air resistance.
24. Fish have streamline shapes to .....
25. By increasing the speed of ships in water, the ..... increases and vice versa.



**5. Give reasons for the following :**

1. If you push a toy car on the floor, it moves for a certain distance till it stops.  
.....
2. When you stop pedalling during the movement of the bike, it slows down.  
.....
3. There is a direct relation between the friction force and the surface area of the moving object.  
.....
4. The friction force depends on the type of the material surface.  
.....
5. Marble moves on the ground of the classroom for a longer distance than that on the playground.  
.....
6. Friction force between glass and glass is smaller than that between glass and wood.  
.....
7. Air resistance depends on the speed of the body that moves through air.  
.....
8. 📖 Rockets, trains, modern cars and aircrafts have streamline shapes.  
.....
9. Birds bodies have streamline shapes.  
.....
10. Parachutist opens the parachute on landing.  
.....
11. 📖 Bat stretches its wings on landing.  
.....
12. 📖 A fish has a streamline shape.  
.....
13. When the speed of the swimmer decreases, water resistance decreases.  
.....
14. Air resistance and water resistance slow down the movement of the body.  
.....



## 6. What happens if ... ?

1. You stop pedalling during the movement of the bike.  
.....
2. You increase the surface area of the moving object.  
.....
3. The speed of the aircraft increases.  
.....
4. A swimmer swims in water with a very high velocity.  
.....

## 7. Write a brief account of friction.

.....

.....

.....

## 8. What happens if you drop two similar sheets of paper, one of them is folded and the other is unfolded. Which one reaches the ground first? Give reason.

.....

## 9. What is meant by ... ?

1. Friction force.  
.....
2. Air resistance.  
.....
3. Water resistance.  
.....

## 10. Draw the direction of the friction force in the opposite diagram.

## 11. Prove with a practical experiment that the friction force changes by changing the type of the material surface.







## Timss Questions

1. Explain why the cube in figure (1) doesn't move, while the cube in figure (2) slides down.



Figure (1)



Figure (2)

2. Look at the opposite figure, then answer :

1. When you throw a marble on the ground, why does it slow down gradually ?
2. What is the direction of the force that causes the stopping of the moving marble ?



3. Which of the following figures is affected by air resistance and which is affected by water resistance.



Fig. (a)



Fig. (b)



Fig. (c)



Fig. (d)



Fig. (e)



Fig. (f)



## LESSON

## 2

## Applications of Friction

- In the previous lesson, you have learned that :
  - Friction force always acts in a direction opposite to the direction of motion.
  - Friction force causes surfaces that are in contact to each other to slow down or even stop motion.
- There are a lot of technological applications based on friction between two surfaces that are in contact.

In this lesson, we are going to study :

Advantages  
(benefits) of friction

Disadvantages  
of friction

Ways to decrease  
friction

Life applications  
of friction

## Advantages (benefits) of friction



- Friction between car tires and the road helps the car to move forwards.



applications  
tires

تطبيقات  
عجلات ways  
disadvantages

طرق technological  
أضرار advantages

تكنولوجية  
قوائد



## Unit

## 1

2

Car brakes that are used to slow down or stop the car depend on friction.



3

Friction helps us to control the car speed and to change the car direction.



4

Friction helps us to walk as the friction between our shoes and the ground prevents us from slipping down.



5

Lighting of a match needs friction.



### Disadvantages of friction

- Friction between the internal moving parts of machines causes a rise in their temperature.



- If their temperature rises up to more than a certain limit (extent), the moving parts of machines are damaged and a lot of money is wasted.



Disadvantage of friction force

enable  
car brakes

يُمكننا lighting  
فرامل السيارة internal

إشعال slipping down  
داخلي

إتلاق match

ثقاب



## G.R.

**Friction causes damage to most of machines.**

Because it raises the temperature of the internal moving parts of machines to more than a certain limit, so machines are damaged.

## Ways to decrease the friction force

Friction force between moving parts of machines can be decreased by :

1 Using lubricants and oil.

2 Using ball bearings.

### 1 Using lubricants and oil

#### • Their use :

They form a thin layer between the internal moving parts of machines, where this layer reduces the effect of the friction force.



#### • Examples :

Using lubricants and oil in a car engine.

### 2 Using ball bearings

#### • Its structure :

They are formed of a group of small metallic balls which have smooth surfaces, so the friction force between them is almost non-existent.



Ball bearings

#### • Its use :

Technicians put ball bearings between the internal moving parts of machines to reduce the friction force.

lubricants  
ball bearings  
car engine  
non-existent

شحوم  
رولمان بلى  
محرك السيارة  
غير موجودة

raises  
damage  
oil  
temperature

يرفع  
تدمر  
زيت  
درجة الحرارة

internal part  
thin layer  
certain limit / extent  
reduce

الأجزاء الداخلية  
طبقة رقيقة  
حد معين  
يقلل



## Unit

1

**Examples :**

The ball bearings that exist in the axis of car engine and transmit the motion from the car engine to the wheels.

**G.R.**

Using lubricants, oil and ball bearings in machines.

To reduce the friction force between their internal moving parts.

**Life applications of friction :****Among life applications of friction**

1 **Saving fuel consumption in cars.**

2 **Rubber tires**

**1 Saving fuel consumption in cars :**

- When a car moves at a high speed, the air resistance increases, so the consumption of fuel increases to overcome the high air resistance.
- Therefore, car drivers are advised not to increase the speed over a certain limit in order to reduce the air resistance and decrease the fuel consumption.

**G.R.**

Car drivers shouldn't increase the car speed up to a certain limit.

To reduce air resistance and the consumption of fuel.

saving  
among  
overcome  
fuel consumption

توفير  
من ضمن  
يقاوم  
استهلاك الوقود  
transmits  
metallic balls  
rubber

ينقل  
كرات معدنية  
مطاط  
axis  
wheels  
advice

عمود  
العجل  
ينصح



## LESSON 2

## Note



Modern cars have streamline shapes to reduce the air resistance in order to decrease the consumption of fuel.

## 2 Rubber tires

The tires are designed with :

1. **Narrow channels along their perimeter. Why ?**  
To prevent water from staying between tires and the road.
2. **Curved grooves that are connected to these channels. Why ?**  
To squeeze water out.



Rubber tires

The reason for this design is that :

- Drivers can't control the vehicle or wheels of the car as water reduces friction between the road and the car tires.
- When a car moves slowly, the tires squeeze water out through curved grooves, but when it moves so fast, water is trapped (collected) under tires as there is no time to squeeze water out.

### G.R.

**Car tires should be replaced when their grooves disappear.**

Because grooves are necessary to squeeze water out as water reduces friction and makes the control of the car very hard.



Try to answer

Test yourself **3**

\* Model Exam on unit **1**

curved grooves  
squeeze out  
narrow channels

قنوات منحنية  
يُطرد  
قنوات ضيقة vehicle  
designed  
trapped

عربة wheels  
صمت perimeter  
تتجمع staying

عجل  
محيط  
البقا



## Remember


- **Benefits (advantages) of friction :**
  - Helps in moving cars forward.
  - Helps to control car speed and change its direction.
  - Helps car brakes to slow down and stop cars.
  - Help us to walk.
  - Help in lighting a match.
- Friction raises the temperature of the internal moving parts of machines to more than a certain limit, so machines are damaged and a lot of money is wasted.
- Using lubricants, oil and ball bearings are ways to decrease friction force.
- Lubricants and oil form a thin layer between the internal moving parts of machines to reduce the effect of friction force.
- Ball bearings are formed of a group of small metallic balls which have smooth surfaces.
- Increasing the speed of a car up to a certain limit causes the increase of air resistance and also increase of consumption of fuel.





## Questions

## on lesson two

Questions signed by  have been taken from the school book.



## 1. Choose the correct answer :

- All the following are advantages of friction except .....
  - it helps in moving and stopping cars and bicycles.
  - it enables us to control the car speed.
  - it enables us to walk.
  - it damages the internal moving parts of machines.
- The friction between your shoes and the ground prevents .....
  - walking.
  - running.
  - slipping down.
  - writing.
- Car brakes that are used to stop cars depend on .....
  - air resistance.
  - water resistance.
  - friction force.
  - (a) , (b) and (c).
- Friction force is necessary for .....
  - lighting a match.
  - changing the car direction.
  - moving a car forwards.
  - (a), (b) and (c).
- Friction between the internal moving parts of a machine causes .....
  - the erosion of the machine parts.
  - the damage of the machine parts.
  - the increase in their temperature.
  - all the previous answers.
- Friction causes a great loss of money, because .....
  - it causes damages for machines.
  - it forms magnets.
  - it repairs a lot of machines.
  - it provides the machines with new parts.
- To decrease the friction force, we must use .....
  - lubricants and oil.
  - batteries.
  - ball bearings.
  - (a) and (c).
- All of the following factors reduce the friction force except .....
  - lubricants.
  - oil.
  - increasing the surface area of the moving parts.
  - using ball bearings.






## Unit

## 1

9. .... can be used to form a thin layer between the internal moving parts of machines to decrease friction.  
a. Lubricating      b. Oiling      c. Ball bearing      d. (a) and (b)
10. Technicians put all the following materials between the internal parts of machines except .....  
a. lubricants.      b. oil.      c. ball bearings.      d. rough balls.
11. It is advisable not to increase the car speed up to a certain limit .....  
a. to reduce air resistance.      b. to reduce the consumption of fuel.  
c. to increase its surface area.      d. (a) and (b).
12. Modern cars are designed in streamline shapes to .....  
a. increase air resistance.      b. decrease water resistance.  
c. be attractive.      d. decrease air resistance.
13. The rubber tires of the car have curved grooves to .....  
a. squeeze the water out.      b. control the vehicle.  
c. make their shapes beautiful.      d. trap the water under them.
14. The presence of water on a road, ..... the friction force between car tires and the road.  
a. increases      b. decreases      c. keeps      d. doesn't affect


**2. Put (✓) in front of the right statement and (x) in front of the wrong one, then correct it :**

1. Friction is necessary for lighting a match. ( )
2. Controlling the car speed and changing its direction is one of the advantages of friction force. ( )
3. Friction force prevent us from slipping down during walking. ( )
4. Friction between the moving parts of machines causes a rise in their temperature and damage for machines. ( )
5. Damage of machines is from the disadvantages of friction. ( )
6.  Ball bearings are used to increase the friction force. ( )
7.  Lubricants and oil are used to decrease the friction force. ( )
8. Ball bearings reduce the friction force as they consist of small metallic balls with smooth surfaces. ( )
9.  Air resistance decreases when the car moves so fast. ( )
10. Car drivers must increase the speed of their cars in order to decrease the fuel consumption. ( )




11. Car tires have grooves and channels to squeeze water out as water increases the friction force. ( )
12. Car tires should be replaced when their grooves disappear. ( )

### 3. Write the scientific term of each of the following :

1. A force enables us to control the car speed and to change its direction. (.....)
2. A force helps us in running and walking. (.....)
3. The force which is necessary for lighting a match. (.....)
4. Materials used to reduce the friction force by forming a thin layer between the internal moving parts of machines. (.....)
5.  A set of small balls with smooth surfaces is put between the internal moving parts of machines. (.....)
6. A metallic structure used to decrease the friction force. (.....)
7. A structure exists in the axis of a car engine and transmits the motion from the car engine to the wheels. (.....)

### 4. Complete the following statements :

1. .... is necessary to control the car speed and to change its .....
2. .... enables us to walk on ground.
3. .... of a match is from the advantages of friction.
4. Car breaks depend on .... force in slowing down and stopping cars.
5. .... is from the disadvantages of friction force.
6. The rise in temperature of the moving parts of machines is due to .....
7. Lubricating and oiling the mechanical machines reduce the ..... between their moving parts and prevent their .....
8.  ..... and ..... are used to decrease the effect of friction force between the internal moving parts of machines.
9. .... is formed of a group of small metallic balls with smooth surfaces.
10. The axis of the car engine that transmits the motion from it to the wheels contains .....
11. Ball bearings are designed to reduce the friction force, because they contain ..... balls that have ..... surfaces.
12. Increasing the speed of a car causes the increase of ..... and the consumption of .....



## Unit

## 1

13. The modern cars save the consumption of fuel than the old ones, because they have .....
14. Car tires have ..... connected with ..... to squeeze the water out.
15. 📖 The presence of ..... and ..... in car tires reduce the effect of water in friction force.
16. 📖 The wet roads leads to ..... between car tires and the road.

### 5. Give reasons for the following :

1. 📖 The car movement needs friction force.  
.....
2. Friction force has many disadvantages.  
.....
3. Damage of the internal parts of machines.  
.....
4. 📖 Lubricants and oil are used in the mechanical machines.  
.....
5. 📖 Ball bearings are put between the surfaces of the moving parts of machines.  
.....
6. The friction force between the metallic balls of a ball bearing is almost non-existent.  
.....
7. 📖 Car drivers shouldn't increase the car speed up to a certain limit.  
.....
8. Technicians put ball bearings between the internal moving parts of machines.  
.....
9. Friction force causes a great economical loss.  
.....
10. A large amount of fuel is consumed when the car moves with high speed.  
.....
11. The presence of grooves and narrow channels in car tires.  
.....



**6. What is meant by ... ?**

Ball bearings.

.....

**7. What happens if ... ?**

1. Absence of friction between car tires and the road.  
.....
2. Absence of friction between your shoes and the road.  
.....
3. The internal moving parts of machines touch each other.  
.....
4. No lubrication takes place periodically on the metallic machine parts.  
.....
5. Engineers design modern cars and aircrafts with large surface areas.  
.....
6. The temperature of the internal moving parts of machines increases.  
.....
7. Technicians put ball bearings between the internal moving parts of machines.  
.....
8. Moving cars with high speed on a wet road.  
.....
9. There are no grooves and narrow channels in the car tires.  
.....

**8. Mention the use of :**

1. Lubricants and oil in machines.  
.....
2. Ball bearings in the car engine.  
.....
3. Ball bearings in mechanical machines.  
.....

**9. The friction force is very necessary. Write the advantages of friction.**

.....

.....

**10. Mention the most important ways to decrease the friction force.**

.....

.....





## Timss Questions

1. The following photos shows car (A) which is a modern car and car (B) which is an old one. Complete the following sentences :



Car (A)



Car (B)

- Air resistance that affects car ..... is greater than that affects car .....
- Car (A) has a ..... shape that reduces the ..... which acts in the opposite direction of its motion and also decreases the consumption of .....

2. The opposite figure shows a young running girl.

- Mention the type of friction that opposes her during running.  
.....
- The ..... force between the ground and her ..... helps her to stop running.



3. The opposite figure shows an electrical saw.

Answer the following questions :

- Why does the temperature of the electrical saw become high ?  
.....
- Why is oil used to lubricate the moving parts of machines ?  
.....  
.....



Electrical saw



## UNIT

## 2

Circulatory System  
and Urinary System

## Lessons of the unit :

1. Circulatory system and circulation.
2. Excretion and human urinary system.

## Unit Objectives: By the end of this unit, you will be able to :

- Identify the concepts of circulation and excretion.
- List the components of the circulatory system and urinary system and their main functions.
- Identify the importance of heart and its role in pumping blood to all the body parts.
- Tracing the blood circulation.
- Identify the role of the urinary system in clearing the body from wastes.
- Identify the role of kidneys in filtering the blood from wastes.
- Acquire the proper directions to maintain the health of the circulatory and urinary system.
- Appreciate the greatness of the creator.

هذا العمل خاص بموقع ذاكرولى التعليمي ولا يسمح بتداوله على مواقع أخرى



## LESSON

## 1

## Circulatory System and Circulation

What do you think the doctor do in this photo ?

The doctor uses his medical tool to check the health of the circulatory system of the patient through listening to his heartbeats.



- In this lesson we are going to study :

- Circulatory system.
- Blood circulation.
- How to maintain circulatory system healthy.

### The circulatory system

⊙ Its functions :

1. It transports the **digested food**, **oxygen** and **water** to all the body cells.
2. It transports **wastes** that are produced in the body cells to **special organs** in your body to get rid of them.
3. It helps in maintaining your body healthy.

circulatory system  
wastes  
circulation

الجهاز الدوري  
الفضلات  
الدوران  
heartbeats  
maintaining  
patient

نضبات قلبه  
الحفاظ على  
مريض  
transport  
heart

ينقل  
القلب



## LESSON 1

## Its structure :

The circulatory system consists of

1

The heart

2

Blood vessels

3

Blood

1

## The Heart



## The heart

It is a muscular hollow organ equals about the size of your fist.

## Its location :

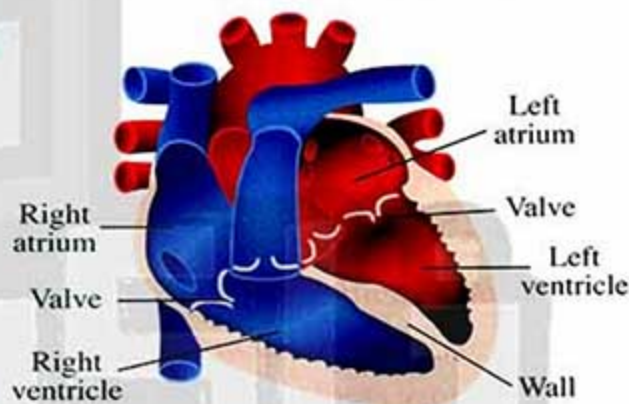
It is located inside the **chest cavity** between the **two lungs**.

## Its function :

It pumps blood continuously throughout the body.

## Its structure :

- The heart consists of **four chambers** (rooms) located in two sides which are the **right side** and the **left side**.
- There is a **wall** that separates between the right side and the left side of the heart. **G.R.**



The structure of the heart

## To prevent mixing of blood in both sides.

- In each side, the upper chamber is called "**atrium**" and the lower chamber is called "**ventricle**".
- There is a **valve** between each atrium and ventricle. **G.R.**

## To allow blood to flow from the atrium to the ventricle and prevents it from returning back.

muscular hollow organ  
pump  
chest cavity  
ventricle (p.ventricles)  
valve

عضو عضلي مجوف  
يدفع / يضخ  
تجويف الصدر  
بطين  
صمام  
fist  
locate  
chambers  
wall  
blood vessels

قبضة اليد  
يقع  
غرف  
جدار  
أوعية دموية  
throughout  
continuously  
atrium (p.atria)  
mixing

في كل أجزاء  
بإستمرار  
أذين  
إختلاط



## Unit 2

## Note

The four chambers of the heart are always full of blood and connected to blood vessels.

## Do you know ?

- The heart normally pumps 4.5 to 5 liters of blood per minute, where this rate increases up to three times when exercising.
- The heart is about 350 gm. in a man weighing 70 kg.



## Question

Write the scientific term :

1. The muscular pump of blood throughout the body. (.....)
2. The upper chambers of the heart. (.....)
3. A structure allows blood to pass from atria to ventricles and prevents its returning back. (.....)

## Answers

1. Heart.
2. Atria.
3. Valve.

## 2 Blood vessels

Blood flows inside the body through a network of blood vessels.

*So, they are the paths of blood throughout the body.*

rate  
network

معدل exercising  
شبكة flows

ممارسة الرياضة weighing  
يسرى paths

بزن  
المسارات



## LESSON 1

There are three types of blood vessels which are

**A** Arteries **B** Veins **C** Blood capillaries

## A Arteries

### Location

They are **thick** blood vessels which **emerge** (come out) from the **heart** exactly from the **two ventricles**, such as :

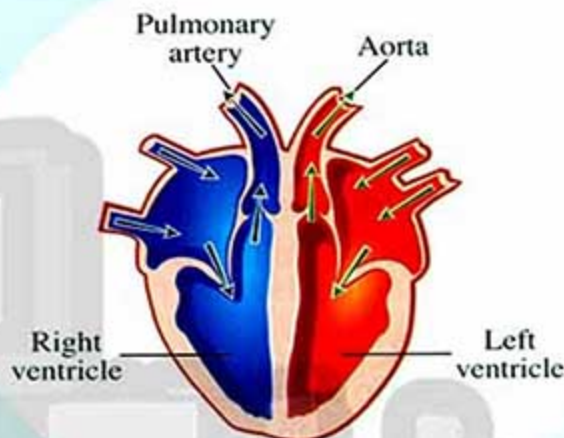
1. Pulmonary artery.
2. Aorta.

### Function

They transport blood from the heart (**at the two ventricles**) to all body parts.

### Properties

1. They are **large** and **wide** at the beginning ( at the heart ), then they become **smaller** till ending in a network of blood capillaries near the cells.
2. All arteries carry blood **rich in oxygen** (**oxygenated blood**) except the **pulmonary artery** which carries blood **rich in carbon dioxide** (**deoxygenated blood**).



## Question

Complete the following sentences :

1. .... and .... are examples of arteries.
2. All arteries carry oxygenated blood except .....

## Answers

1. Pulmonary artery - aorta
2. pulmonary artery.

thick

pulmonary artery

exactly

سميكة

aorta

شريان رئوي

بالتحديد

arteries

الأورطي الأعظم veins

الشرايين

blood capillaries

أوردة

شعيرات دموية



## Unit 2

## B Veins

## Location

They are **thin** blood vessels that begin **at body cells** and open in the heart exactly in the two atria, such as :

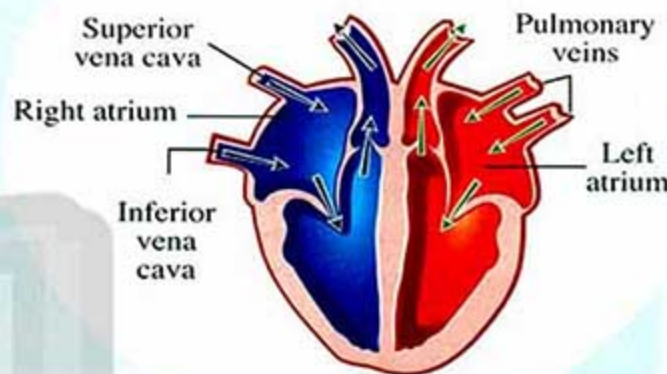
1. Superior and inferior vena cava.
2. Pulmonary veins.

## Function

They carry blood from all body parts to the heart (**at the two atria**).

## Properties

1. They begin in the form of **blood capillaries at the cells**, then they are collected together to become **larger** till reaching the heart.
2. All veins carry blood **rich in carbon dioxide (deoxygenated blood)** except the pulmonary veins which carry blood **rich in oxygen (oxygenated blood)**.



## Notes



- Atria receive blood from veins, while ventricles pump blood through arteries.
- Arteries end with blood capillaries, while veins begin with blood capillaries.



## Question

Complete the following sentences :

1. All veins carry deoxygenated blood except .....
2. Veins carry blood from ..... to .....

## Answers

1. pulmonary veins.
2. all the body parts - the heart.

superior vena cava  
inferior vena cava

الوريد الأجوف العلوي  
الوريد الأجوف السفلي

pulmonary veins  
thin

الأوردة الرئوية  
رفيعة

receive

يستقبل



## LESSON 1

## Comparison between arteries and veins :

Points of comparison	Arteries	Veins
• <b>Thickness :</b>	They are thick blood vessels.	They are thin blood vessels.
• <b>Function :</b>	They carry blood from the heart to all the body parts.	They carry blood from all the body parts to the heart.
• <b>Type of blood :</b>	All arteries carry blood rich in oxygen except the <b>pulmonary artery</b> which carries blood rich in carbon dioxide.	All veins carry blood rich in carbon dioxide except the <b>pulmonary veins</b> which carry blood rich in oxygen.
• <b>Examples :</b>	- Aorta. - Pulmonary artery.	- Pulmonary veins. - Superior vena cava and inferior vena cava.

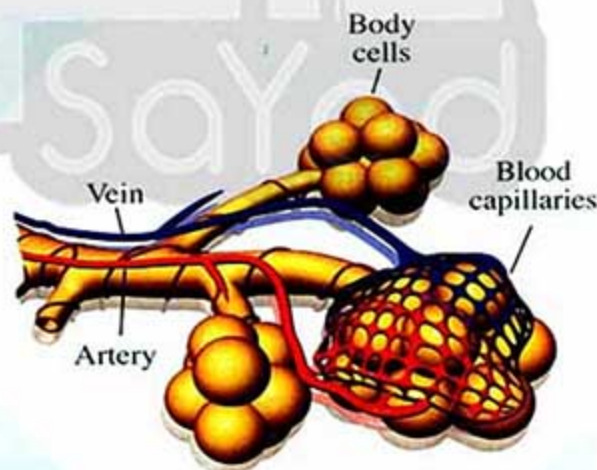
## C Blood capillaries

## Location

They are network of tiny blood vessels with very thin walls that are located within tissues and around the cells.

## Function

1. They connect the ends of arteries and the beginnings of veins.
2. Their thin walls allow blood to deliver food and oxygen to the cells and carries carbon dioxide and wastes out of the cells.



thickness  
deliver

tiny  
يُسَلِم

دقيقة



## G.R.

**Blood capillaries have very thin walls.**

To deliver food and oxygen to the cells and carries carbon dioxide and wastes out of the cells.

## Exercise

Choose the correct answer :

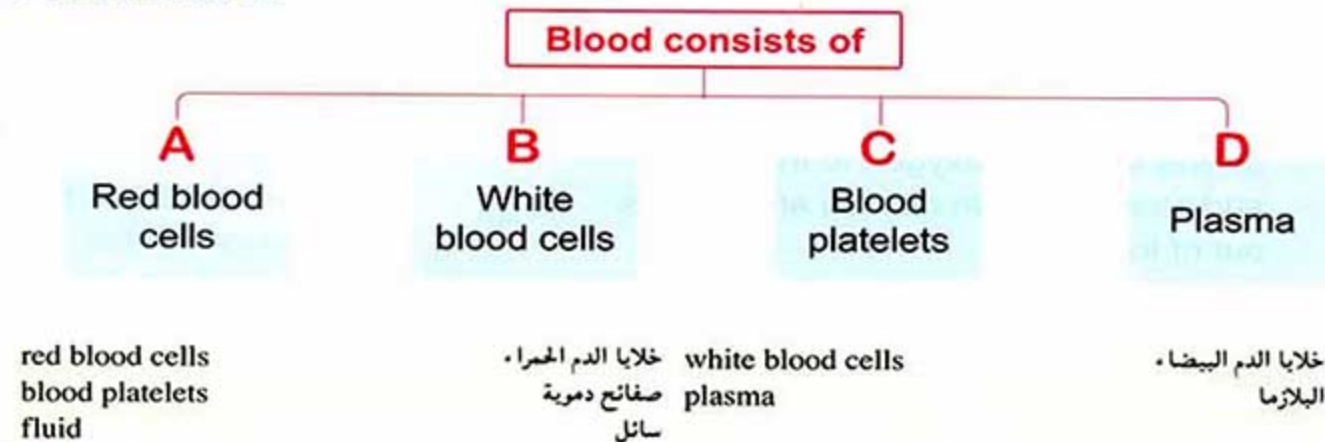
- ..... have very thin walls to deliver food and oxygen to all body cells.  
a. Veins                      b. Blood capillaries      c. Arteries                      d. Blood
- ..... carry blood from the heart to all body cells.  
a. Blood capillaries      b. Veins                      c. Arteries                      d. (a) and (b)
- ..... are examples of veins.  
a. Aorta and venae cavae                      b. Pulmonary veins and aorta  
c. Pulmonary artery and aorta                      d. Venae cavae and pulmonary veins
- Types of blood vessels are .....  
a. arteries.                      b. veins.  
c. blood capillaries.                      d. (a), (b) and (c).

## 3

## Blood

- It is a red fluid (liquid) that passes through the blood vessels.

Its structure :



Try to answer  
Test yourself **4**



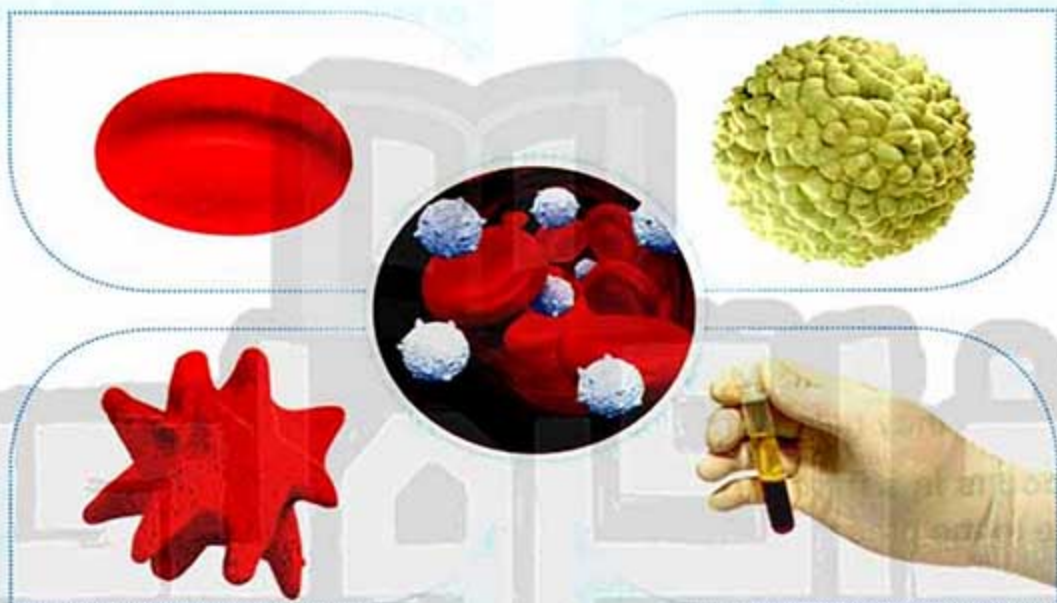
## LESSON 1

**A Red blood cells (RBC'S) :**

They are red cells without nuclei.

**Functions :**

1. They carry oxygen from the lungs to all body cells.
2. They carry carbon dioxide from all body cells to the lungs.

**C Blood platelets :**

They are small cell fragments (parts).

**Function :**

They help in coagulation of blood (formation of blood clot), so they help in healing wounds.

**Where :**

When the body is wounded and blood is exposed to air, platelets prevent bleeding and heal wounds.

**B White blood cells (WBC'S) :**

They are white cells with different forms of nuclei.

**Function :**

They defend the body against microbes (attack microbes that enter the body).

**D Plasma :**

It is a yellow watery fluid in which all blood components are suspended.

**Functions :**

1. It carries the needed food substances to body cells.
2. It carries the harmful wastes that formed in the cells to another cells to get rid of them.

nuclei  
attacking  
coagulation  
defend

أنوية yellow watery fluid  
مهاجمة blood clot  
تجلط bleeding  
يدافع عن suspended

سائل مائي أصفر against microbes  
جلطة دموية fragments  
التزيف healing wounds  
معلق harmful

ضد الميكروبات  
قطع  
التئام الجروح  
ضار



## Unit 2

From the previous explanation, we can summarize the functions of blood as follows :

**1. The transfer (delivery) of materials to all body cells, where :**

- The red blood cells carry oxygen and carbon dioxide.
- Plasma transports food, vitamins, salts and also the harmful wastes produced in the cells.

**2. The defence and protection of the body, where :**

- White blood cells attack microbes that cause diseases to human.
- Blood platelets help in healing wounds.
- Blood keeps the temperature of the body constant.

## G.R.

- **Blood platelets are very important.**

Because they help in the coagulation of blood when the body is wounded.

- **Blood is in a fluid form (liquid form).**

Due to the presence of plasma which is a watery fluid.



## Question

*Mention one function for each of the following :*

1. Plasma.
2. Blood platelets.
3. Red blood cells.
4. White blood cells.

## Answers

1. It carries the needed food substances to the body cells.
2. They help in blood coagulation and healing wounds.
3. They carry oxygen gas from the lungs to all body cells.
4. They defend the body against microbes.

delivery  
protection

توزيع / تسليم  
حماية constant

فيتامينات  
ثابت defence

دفاع



## LESSON 1

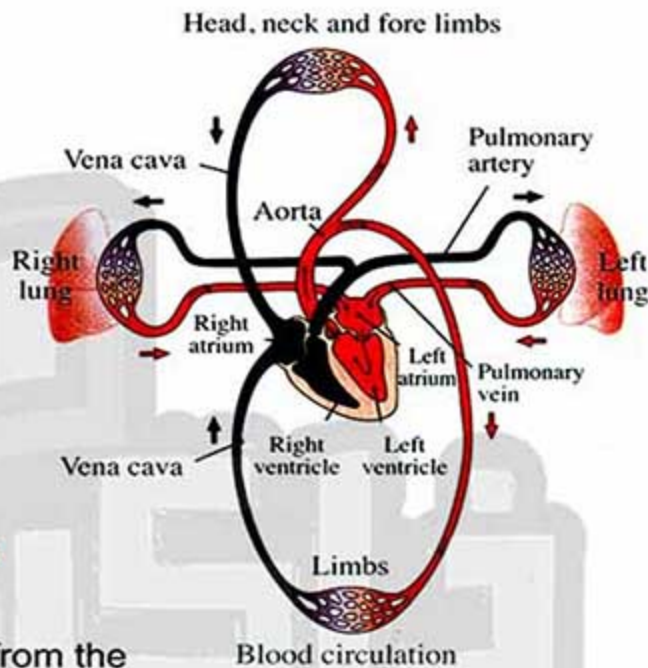
## Blood circulation

Blood circulation

It is the path of blood throughout the body.

## Steps of blood circulation :

1. Blood carrying **carbon dioxide** coming from all the body parts to the **right atrium** through two large veins which are **superior and inferior venae cavae**.
2. Blood flows into the right ventricle through a **valve**.
3. The **right ventricle** contracts pumping blood to the two lungs through the **pulmonary artery**.
4. Inside the two lungs, **carbon dioxide** is exchanged with **oxygen**.
5. Blood rich in **oxygen** (which comes from the two lungs) returns to the **left atrium** through the **pulmonary veins**, then it flows into the **left ventricle** through a **valve**.
6. The **left ventricle** contracts pumping the blood rich in **oxygen** to all body cells through a large artery called **aorta**.



## G.R.

The wall of the **left ventricle** is more thicker than the **right ventricle**. Because the left ventricle pumps blood to all body cells, while the right ventricle pumps blood to the two lungs only.

From the previous explanation, we conclude that blood circulation can be divided into two circulations, which are:

- A. The minor (pulmonary) blood circulation.
- B. The major (systemic) blood circulation.

blood circulation

دوران الدم

contract

ينقبض

الصغرى

pulmonary blood circulation

دورة الدم الرئوية

exchanged

يتبادل

صمام

major

الكبرى

systemic blood circulation

دورة الدم الجهازية

path

مر / طريق



**(A) The minor (pulmonary) blood circulation**

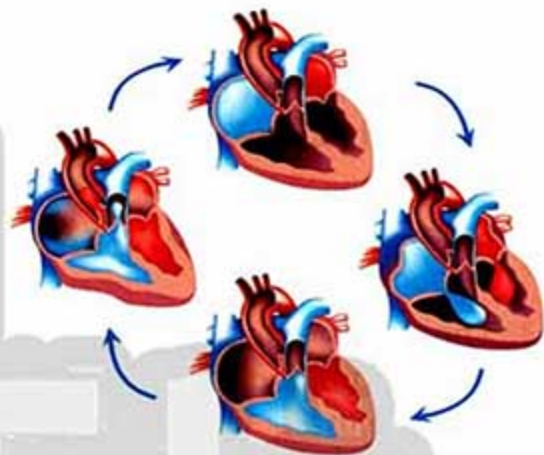
It is the blood circulation between the heart and the two lungs.

**(B) The major (systemic) blood circulation**

It is the blood circulation between the heart and all parts of the body.

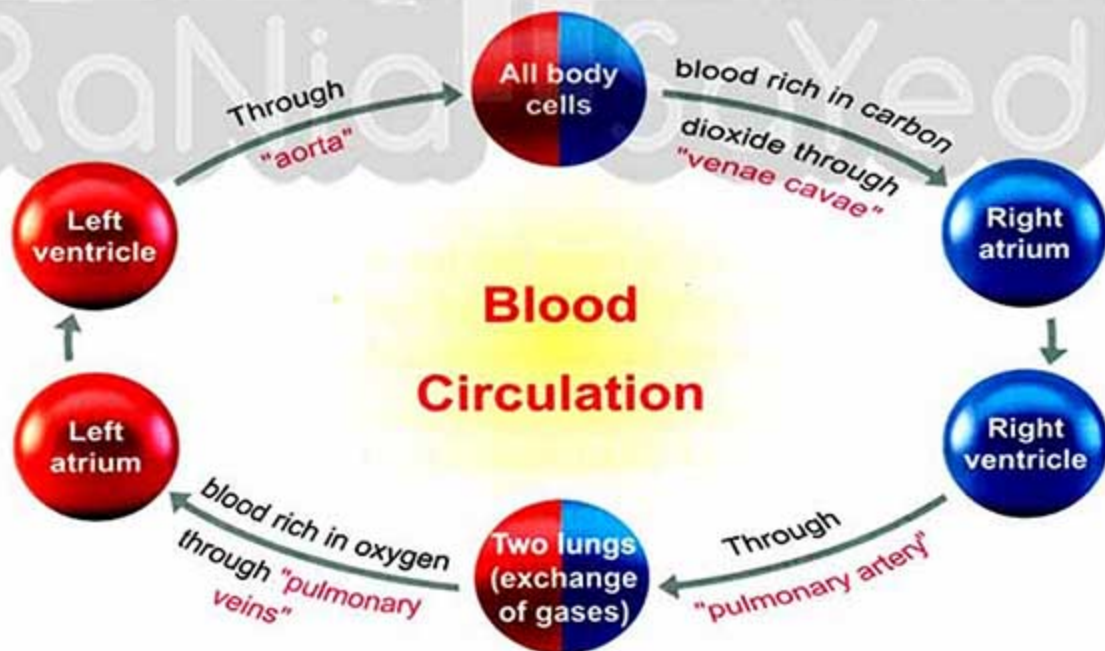
**Notes**

- When the right atrium receives blood **rich in carbon dioxide** from venae cavae, the left atrium receives blood **rich in oxygen** from the pulmonary veins.
- When the right ventricle pumps blood to **the lungs**, the left ventricle pumps blood to **all the body cells**.
- The pumping of blood in your arteries is called **heartbeat**.



Operation of the heart valves

• We can summarize the blood circulation in the following diagram :





## LESSON 1

## Activity 1

To know how to calculate the number of heartbeats per minute.

## Steps:

1. Place your arm on a desk and palm up.
2. Ask your friend to put his middle finger against the wrist near the base of your thumb.
3. Look at your watch and count your pulses for 10 seconds.
4. Multiply the number of pulses by 6 to obtain the number of your heartbeats per minute.



## Observation:

Your friend feels the pulse in your wrist.

## Conclusions :

- Your heartbeats push the blood in your arteries so, you feel the pulse in your wrist.
- The number of heartbeats at rest is about **70 beats** per minute.

## Activity 2

To prove that the rate of heartbeats changes during exercising.

## Steps:

1. Sit comfortably and put your hand on your chest to count your heartbeats per minute.
2. Run around several minutes, then count your heartbeats again.



## Observation:

The rate of your heartbeats increases during running.

pulse  
palm up  
base

نبضه wrist  
بُرْخَى رَاةِ الْيَدِ thumb  
قَاعَة comfortably

الرَّسْغ  
الْإِبْهَام  
مُسْتَرِيح



**Conclusion :**

During **exercising**, the rate of your heartbeats **increases** to supply body cells with oxygen and food that are needed to produce more energy.

**How to maintain the circulatory system healthy :**

1

Keep exercising **to strengthen** the heart muscle and **to activate** the blood circulation.



2

Eat healthy and balanced food that is low in fat and salt.



3

Eat more fresh and clean vegetables and fruits.



4

Drink an appropriate (a suitable) amount of clean water every day, especially in summer.



supply  
activate  
appropriate

يد  
بُنْشَط  
مُنَاسِب  
keep exercising  
balanced  
strengthen

ممارسة التمارين  
متوازن  
تقوية  
fresh

طازج



## LESSON 1

5

Avoid exposure to infections and accidents and when you are wounded :

- Try to stop bleeding.
- Clean the wound and treat it.



6

Avoid smoking and smokers, where smoking :

- Harms the heart.
- Weakens the blood circulation.



G.R.

**We must avoid smoking.**

To keep the circulatory system healthy, because smoking harms the heart and weakens the blood circulation.

## Do you know ?

### The electronic pacemaker :

- Recently, patients of heart diseases (are subjected to heart attack) use an **electronic pacemaker** which is implanted beneath the skin and connected to the heart muscle by wires.
- Both **natural** and **electronic pacemakers** work together by sending signals to heart muscle to work regularly.
- When the **natural pacemaker** stops after the occurrence of heart attack, the **electronic pacemaker** works alone in order to keep the heart pulsing.



Try to answer  
Test yourself

5

accidents

smoking

electronic pacemaker

signals

الحوادث

التدخين

صانع الضربات الإلكترونية

إشارات

exposure

smokers

heart attack

heart pulsing

التعرض

مدخنين

أزمة قلبية

نبض القلب

infections

treat

weakens

implanted

الإصابات

يعالج

يضعف

يُزرع



# Remember


- The circulatory system consists of **the heart, blood vessels and blood**.
- The heart consists of **four chambers** located in two sides.
- The two upper chambers of the heart are called **atria**, while the two lower chambers are called **ventricles**.
- There is a **valve** between each atrium and ventricle to allow the flow of blood in one direction only (from atrium to ventricle and not in the opposite direction).
- **Types of blood vessels are :**
  - Arteries.
  - Veins.
  - Blood capillaries.
- All arteries carry blood **rich in oxygen** except **the pulmonary artery** which carries blood **rich in carbon dioxide**.
- All veins carry blood **rich in carbon dioxide** except **the pulmonary veins** which carry blood **rich in oxygen**.
- Blood is a red liquid that consists of **red blood cells, white blood cells, blood platelets and plasma**.
- **To keep your circulatory system healthy, you must :**
  1. Keep exercising.
  2. Eat healthy and balanced food.
  3. Eat fresh vegetables and fruits.
  4. Drink a suitable amount of clean water.
  5. Avoid exposure to infections and accidents.
  6. Avoid smoking and smokers.








## Questions

## on lesson one

Questions signed by  have been taken from the school book.



## 1. Choose the correct answer :

- All the following are from the components of the circulatory system except .....  
a. heart.                      b. blood vessels.      c. stomach.                      d. blood.
-  The heart is a muscular pump in the size of your .....  
a. fingers.                      b. foot.                      c. head.                      d. fist.
- The heart is a ..... muscular organ.  
a. strong solid                      b. strong hollow  
c. weak solid                      d. weak hollow
- There is a (an) ..... between the two sides of the heart to prevent the mix of blood in both sides.  
a. valve                      b. wall                      c. atrium                      d. vein
-  Blood vessels which carry blood from the heart are the .....  
a. arteries.                      b. veins.  
c. blood capillaries.                      d. valves.
- ..... carry blood to the heart.  
a. Veins                      b. Platelets                      c. Arteries                      d. Blood capillaries
- ..... begin with blood capillaries.  
a. Arteries                      b. Veins                      c. Atria                      d. Plasma
- ..... carry blood rich in oxygen.  
a. Valves                      b. Plasma and blood platelets  
c. Arteries                      d. White blood cells
- ..... begin large and wide at the heart.  
a. Arteries                      b. Veins  
c. Blood platelets                      d. Blood capillaries
- The function of red blood cells is .....  
a. blood clotting.                      b. carrying the digested food.  
c. carrying oxygen.                      d. (b) and (c).
-  Blood components which are responsible for attacking the microbes that cause diseases to man are the .....  
a. red blood cells.                      b. white blood cells.  
c. blood platelets.                      d. plasma.



## Unit

## 2

12. The digested food is transferred from the digestive system to the body cells by .....
- plasma.
  - red blood cells.
  - white blood cells.
  - platelets.
13. .... is the watery part of the blood.
- Blood platelets
  - Plasma
  - Red blood cells
  - White blood cells
14. .... carry oxygen from lungs to all body cells.
- White blood cells
  - Red blood cells
  - Platelets
  - Plasma
15. .... coagulate blood when the body is wounded.
- Red blood cells
  - White blood cells
  - Plasma
  - Blood platelets
16. The functions of blood are .....
- the defence of the body only.
  - keeping the temperature of the body constant only.
  - the delivery of materials only.
  - (a) , (b) and (c).
17. .... receives the oxygenated blood from lungs.
- Right atrium
  - Left atrium
  - Left ventricle
  - Right ventricle
18. The pulmonary artery carries blood from ..... to the lungs.
- right atrium
  - right ventricle
  - left atrium
  - left ventricle
19. The blood rich in carbon dioxide is collected from all the body parts to the heart through .....
- venae cavae.
  - aorta.
  - pulmonary veins.
  - pulmonary artery.
20. The aorta is connected to the .....
- left atrium.
  - right atrium.
  - left ventricle.
  - right ventricle.
21. The right side of the heart contains blood rich in ..... gas(es).
- oxygen
  - carbon dioxide
  - nitrogen
  - (a) and (b)
22. The left ventricle pumps the blood to .....
- hands.
  - lungs.
  - heart.
  - all body cells.



23. .... is the blood circulation between the heart and all the parts of the body.
- a. Systemic blood circulation      b. Pulmonary blood circulation  
c. Artery      d. Vein
24. Why does the rate of heartbeats increase during exercise ? .....
- a. To get more oxygen rich blood.      b. To obtain more energy.  
c. To get rid of carbon dioxide.      d. All answers are correct.
25. Keeping the circulatory system healthy requires all the following except .....
- a. practicing sports.      b. avoiding smoking.  
c. eating more fats.      d. drinking suitable amounts of water.

## 2. Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Right ventricle	a. carries blood rich in oxygen.
2. Left atrium	b. pushes blood rich in carbon dioxide to lungs.
3. Right atrium	c. prevents the returning back of blood inside the heart.
4. Pulmonary vein	d. carries blood rich in carbon dioxide.
5. Left ventricle	e. receives blood rich in carbon dioxide from veins.
6. Pulmonary artery	f. pushes blood rich in oxygen to all the body parts.
7. Valve	g. receives blood rich in oxygen from veins.

1. ....      2. ....      3. ....  
4. ....      5. ....      6. ....  
7. ....

(A)	(B)
1. Red blood cells	a. is a yellow watery fluid.
2. White blood cells	b. prevent blood bleeding.
3. Blood platelets	c. pump blood to all the body organs.
4. Plasma	d. carry oxygen from lungs to all body parts.
	e. defend the body against microbes.

1. ....      2. ....  
3. ....      4. ....







## Unit 2

## 3. Complete the following sentences by using the following words :

(plasma - valve - veins - left ventricle - blood clot -  
pulmonary artery - blood platelets)

1. Vessels that carry blood to the heart are called .....
2. There is a ..... between atrium and ventricle on each side of the heart.
3. When the left atrium contracts, it pushes blood to the .....
4. All arteries carry blood rich in oxygen except .....
5. Blood consists of red blood cells, white blood cells, ..... and .....
6. When the blood is exposed to the air, a ..... is formed.

## 4. Put (✓) in front of the correct statement and (✗) in front of the incorrect one, then correct it :

1. The heart consists of two atria and two ventricles. ( )
2. The heart is located inside the mouth cavity. ( )
3.  There are valves within the heart cavity. ( )
4.  The heart has two sides. ( )
5. When blood flows from an atrium to a ventricle, the valve is opened, then closed to prevent the returning back of blood to the atrium. ( )
6. The function of arteries is carrying blood from all the body parts to the heart. ( )
7. Blood capillaries are considered the ends of arteries and the beginnings of veins. ( )
8.  The aorta delivers deoxygenated blood to the lungs. ( )
9. Superior and inferior venae cavae are examples of arteries. ( )
10.  Red blood cells are responsible for defending the body against microbes. ( )
11. Red blood cells are red cells with nuclei. ( )
12. White blood cells have nuclei. ( )
13. The yellow watery fluid that transports food, vitamins and salts is the vein. ( )
14. White blood cells help in healing wounds by formation of blood clot. ( )
15. The blood circulation between the heart and all body cells is called the major blood circulation. ( )



## QUESTIONS LESSON 1



16. When the right ventricle contracts, it pushes the blood carrying oxygen to the two lungs. ( )
17. When the right atrium receives blood from the venae cavae, the left atrium receives blood from pulmonary veins. ( )
18. Pulmonary artery carries blood rich in oxygen. ( )
19. Blood rich in oxygen returns from the lungs to the right atrium. ( )
20. The pulmonary veins carry blood rich in carbon dioxide. ( )
21. It is important to drink small amounts of water to keep the health of your circulatory system. ( )
22. 📖 Eating meals rich in fats and salts activate the circulatory system. ( )

## 5. Write the scientific term of each of the following :






1. The system that transports oxygen, digested food and water to all body cells. ( .....
2. 📖 A muscular organ, equals about your fist size and located within the chest. ( .....
3. 📖 The lower two chambers of the heart. ( .....
4. It allows blood to flow from atrium to ventricle and not in the opposite direction. ( .....
5. 📖 The network of pipelines that extends all over the human body. ( .....
6. 📖 The artery that carries blood rich in carbon dioxide. ( .....
7. One of the heart chambers that pumps blood to all body cells. ( .....
8. 📖 The blood vessels that collect blood from all body parts and pour it into the heart. ( .....
9. The ends of arteries and the beginnings of veins. ( .....
10. The artery that carries blood from the right ventricle to the two lungs. ( .....
11. 📖 The cells which carry oxygen. ( .....
12. Cells that resist the microbes which attack the body. ( .....
13. 📖 Small bodies that play a role in blood coagulation when the body is wounded. ( .....
14. 📖 A yellow watery fluid in which blood cells are suspended. ( .....
15. The liquid component of the blood which carries the digested food and the waste products. ( .....



## Unit 2

16. One of the blood components that help in healing wounds. (.....)
17. A component of the circulatory system that transfers the materials to all body cells and keeps body temperature constant. (.....)
18.  The flow of blood to the lungs and its returning back again to the heart. (.....)
19.  Blood circulation between the heart and all body parts except the two lungs. (.....)
20. The artery that carries blood rich in oxygen to all parts of the body. (.....)
21. The heart chamber that receives blood rich in oxygen from the two lungs. (.....)
22. The veins that transport blood rich in carbon dioxide to the right atrium. (.....)
23. Blood vessels allow blood to deliver food and oxygen to the cells. (.....)

## 6. Complete the following statements :

1.  The circulatory system consists of ....., ..... and .....
2. The circulatory system transports ....., ..... and water to all body cells.
3.  The heart is located within the chest cavity between the .....
4. The ..... is a muscular hollow organ.
5.  The heart consists of ..... chambers filled with ..... and connected to .....
6. Each side of the heart consists of ..... chambers, the upper one is called ..... and the lower one is called .....
7. In each side of the heart, there is a ..... to prevent blood from returning back to the atrium.
8. Blood flows from the atrium to ..... through the .....
9.  Blood flows inside a network of pipelines called .....
10. There are three types of blood vessels which are ....., ..... and .....
11.  The blood vessels that emerge from the heart are called .....
12. Arteries transport blood from ..... to .....
13. Vessels that carry blood to the heart are called .....
14. .... end with blood capillaries, while ..... begin with blood capillaries.







## QUESTIONS LESSON 1

15. The tiny blood vessels which connect the ends of arteries and the beginnings of veins are called .....
16. All arteries carry blood rich in oxygen except the .....
17. All veins carry blood rich in carbon dioxide except the .....
18. 📖 Pulmonary artery carries ..... blood, while pulmonary veins carry ..... blood.
19. The atria receive blood through ..... , while ventricles push blood into .....
20. Blood consists of ..... , white blood cells, ..... and .....
21. 📖 ..... blood cells carry oxygen and carbon dioxide inside the body.
22. 📖 ..... blood cells attack microbes that cause diseases to human.
23. .... are red cells without nuclei, while ..... are white cells with different forms of nuclei.
24. 📖 Blood platelets form ..... which help in healing wounds.
25. 📖 ..... keeps the body temperature constant.
26. The path of blood throughout the body is called .....
27. The right atrium receives blood rich in .....
28. Blood rich in oxygen comes from the lungs and returns to the left ..... through .....
29. 📖 ..... is the blood vessel that transfers blood from the heart to the lungs.
30. 📖 ..... atrium receives blood from all body parts except lungs.
31. .... ventricle pushes blood to the two lungs through .....
32. 📖 The left ventricle pushes blood through .....
33. The blood circulation between the heart and the lungs is called ..... , while the blood circulation between the heart and all the body cells is called .....
34. The number of heartbeats is ..... per minute.
35. 📖 Heartbeats cause ..... to all body parts.
36. During making a muscular effort, the number of your heartbeats .....
37. You must keep exercising to strengthen the ..... and activate the .....



## Unit 2

## 1. Give reasons for the following :

1. The circulatory system is called the system of transferring in the human body.  
.....  
.....
2.  The two sides of the heart are separated.  
.....  
.....
3.  Blood flows in one direction inside the heart.  
.....  
.....
4.  The heart contains a valve between each atrium and ventricle.  
.....  
.....
5. Blood is in a liquid form.  
.....  
.....
6.  Blood capillaries have thin walls.  
.....  
.....
7. The red blood cells have great importance.  
.....  
.....
8. The blood platelets have a role in healing wounds.  
.....  
.....
9. Blood plasma is important.  
.....  
.....
10. White blood cells keep your body healthy.  
.....  
.....
11. Aorta is the largest artery in the body.  
.....  
.....
12. Blood is a very important fluid.  
.....  
.....



13. 📖 It is necessary to keep exercising.

14. 📖 We should not eat a lot quantity of fats.

15. 📖 Smoking must be avoided.

16. 📖 It is necessary to avoid the exposure to infections and accidents.

**8. Write the function of each of the following :**

1. The circulatory system.

2. The heart.

3. The valve between each atrium and ventricle.

4. The wall between the two sides of the heart.

5. Veins.

6. Arteries.

7. The blood capillaries.

8. 📖 The red blood cells.

9. 📖 The white blood cells.




## Unit 2

10.  Blood platelets.

11.  Plasma.

12. Blood.

### 9. What happens if ... ?

1.  The two sides of the heart are not separated from each other.

2. There are no valves between the upper and the lower chambers of the heart.

3. Blood capillaries have thick walls.

4. The left ventricle contracts.

5. Blood platelets are absent from the blood.

6. Microbes attack the body.

7. Your body is wounded.

8.  You run around for 5 minutes with respect to heartbeats.

9. A man smokes cigarettes.



## QUESTIONS LESSON 1

## 10. What is meant by ... ?

1. Minor blood circulation.

.....

2. Blood plasma.

.....

3. Blood vessels.

.....

4. Major (systemic) blood circulation.

.....

## 11. Compare between :

1. Arteries and veins.

.....

.....

.....

.....

2. Red blood cells, white blood cells and blood platelets.

.....

.....

.....

## 12. Look at the opposite diagram, then answer :

1. Illustrate with arrows the path of blood in the heart.
2. Mention the kind of blood in each atrium.

.....

.....





## Unit 2

**13.** The opposite figure shows the blood components :

- a. Name the components number ① , ② , ③ and ④ .

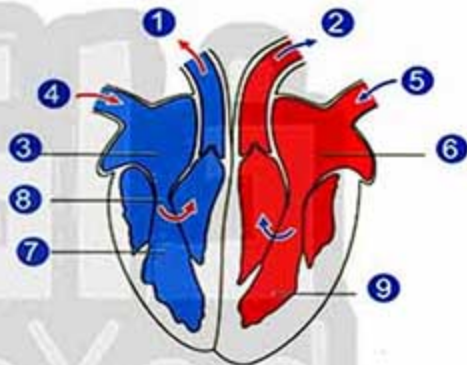
- b. Which component carries water and food materials ?

- c. What are the functions of component number ① and component number ② .



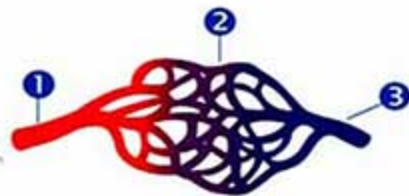
**14.** Label the following figure :

- |         |         |
|---------|---------|
| 1. .... | 2. .... |
| 3. .... | 4. .... |
| 5. .... | 6. .... |
| 7. .... | 8. .... |
| 9. .... |         |



**15.** Look at the opposite figure, then complete the following :

- a. The figure represents the three types of .....
- b. Structure number ① represents ..... that carries the blood from ..... to .....
- c. Structure number ② represents ..... that have very thin walls to .....
- d. Structure number ③ represents ..... which carries blood from ..... to .....



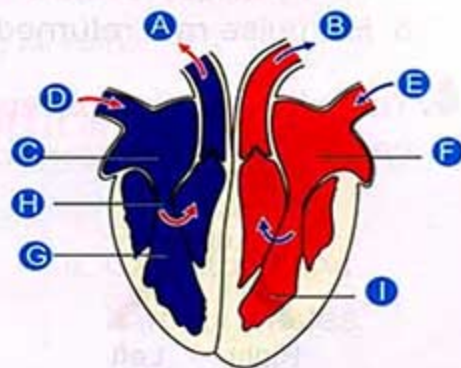




## Timss Questions

1. Look at the following figure, then use the letters on this figure to answer the following questions. (Note : the first question is answered as an example) :

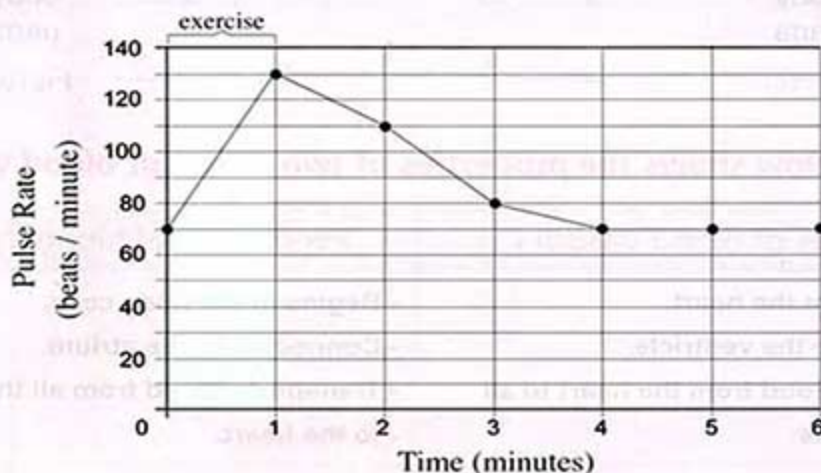
1. It receives the deoxygenated blood through venae cavae veins. ( C )
2. It pushes the deoxygenated blood through pulmonary artery. (.....)
3. It allows the flow of blood from atrium to ventricle only. (.....)
4. It receives the oxygenated blood through pulmonary veins. (.....)
5. It pushes the oxygenated blood through aorta. (.....)
6. A blood vessel carries deoxygenated blood to the lungs. (.....)
7. A blood vessel carries oxygenated blood to all body cells. (.....)
8. A blood vessel carries oxygenated blood from the lungs. (.....)
9. A blood vessel carries deoxygenated blood from all body cells. (.....)



2. If harmful bacteria enter your body. Which type of cells inside your body will destroy this bacteria ?

- a. Lung cells.
- b. Muscle cells.
- c. White blood cells.
- d. Red blood cells.

3. Ahmed measures his pulse rate before he exercises, it is 70 beats per minute. He exercises for one minute and measures his pulse rate again. He then measures it every minute for several minutes. He draws a graph to show his results.



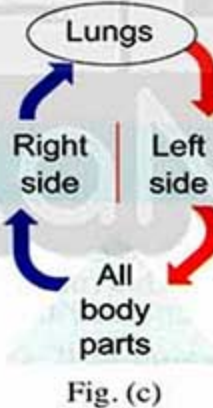
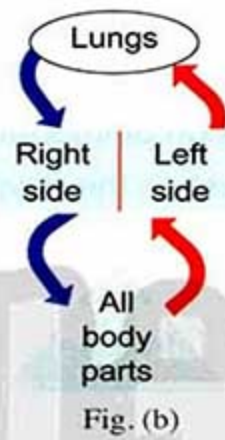


## Unit 2

**What can be concluded from his results ?**

- His pulse rate increased by 50 beats per minute.
- His pulse rate took less time to slow down than to increase.
- His pulse rate after 4 minutes was 80 beats per minute.
- His pulse rate returned to normal in less than 6 minutes.

**4. The following figures represents the human blood circulation. Which figure is the correct one ?**



**5. The table below shows the properties of two different blood vessels.**





Properties of blood vessel (1)	Properties of blood vessel (2)
<ul style="list-style-type: none"> <li>- Emerges from the heart.</li> <li>- Connected to the ventricle.</li> <li>- Transports blood from the heart to all the body parts.</li> </ul>	<ul style="list-style-type: none"> <li>- Begins at the body cells.</li> <li>- Connected to the atrium.</li> <li>- Transports blood from all the body parts to the heart.</li> </ul>



Which statement about blood vessels (1) and (2) is correct :

- Blood vessel (1) is vein and blood vessel (2) is artery.
- Blood vessel (1) is blood capillary and blood vessel (2) is vein.
- Blood vessel (1) is artery and blood vessel (2) is blood capillary.
- Blood vessel (1) is artery and blood vessel (2) is vein.

6. Choose from column (B) and column (C) what suits it in column (A) :

(A)	(B)	(C)
1. Small cell fragments.	a. 	e. Carry food and harmful wastes.
2. Have different forms of nuclei.	b. 	f. Help in coagulation of blood.
3. A yellow watery fluid.	c. 	g. Defend the body against microbes.
4. Have no nuclei.	d. 	h. Carry oxygen and carbon dioxide.

1. → ..... → .....

2. → ..... → .....

3. → ..... → .....

4. → ..... → .....



## LESSON

## 2

## Excretion and Human Urinary System

- Excretion is one of the processes that takes place inside your body to get rid of harmful materials which are produced from burning of food.

- In this lesson, we are going to study :

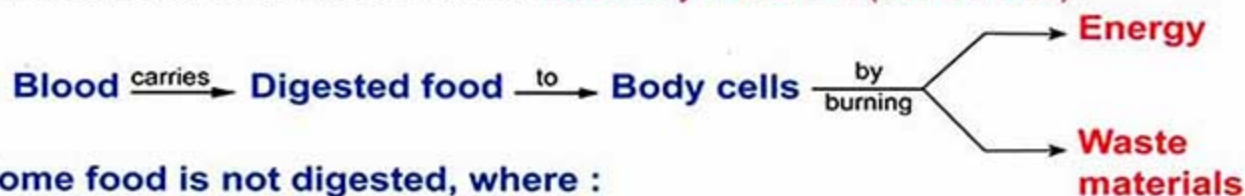
- Excretion.
- Urinary system.

## Excretion

When we eat food :

⊙ Some food is digested, then :

- Blood carries the digested food to all body cells.
- Body cells burn the digested food to produce energy and release some waste materials to blood to be expelled out of the body.
- These waste materials are called **excretory materials (cell wastes)**.



⊙ Some food is not digested, where :

This **indigested food** becomes useless, so it must be expelled outside the body in the form of **solid wastes**.

excretion  
digested food  
useless  
excretory materials

الإخراج solid wastes  
الغذاء المهضوم human urinary system  
غير مفيدة expelled out  
مواد إخراجية indigested

الفضلات الصلبة (البراز)  
الجهاز البولي للإنسان  
تُطرد للخارج  
غير مهضوم



So, there are two types of wastes that expelled outside the body :

A. Solid wastes.

B. Excretory materials.

## A Solid wastes

### Solid wastes

They are the indigested food stored in the large intestine until they pass out of the body.

## B Excretory materials

### Excretory materials

They are waste materials produced inside the body cells, where the body must get rid of them.

- The excretory materials are expelled out of the body through the **excretion process**.
- The excretory materials contains :
  - **Harmless materials** that the body cannot use.
  - **Poisonous materials** that the body must get rid of.

### The excretory materials are

#### 1 Carbon dioxide

Carbon dioxide is produced with water vapour when the body cells **burn** **digested food** to produce **energy**.

#### 2 Excess salts and excess water

The body gets rid of the excess salts by dissolving them in the excess water.

#### 3 Nitrogenous wastes

Nitrogenous wastes (such as urea and uric acid) are produced from breaking down of **proteins**. (Proteins are necessary for the growth of body and repairing the damaged tissues).

stored  
repairing  
harmless  
nitrogenous wastes

يخزن large intestine  
إصلاح damaged tissues  
غير ضارة poisonous  
فضلات نيتروجينية excess

الأمعاء الغليظة  
الأنسجة التالفة  
سامه  
زائد



## Unit 2

## How do your body cells get rid of excretory materials?

When body cells produce wastes, they release them to blood through the **thin walls of the blood capillaries**

Blood carries these wastes to special organs to get rid of them where

### 1 Carbon dioxide and water vapour

are exhaled from the **two lungs** during the exhalation process.



Lungs

### 2 Nitrogenous wastes (urea & uric acid)

are removed by the **two kidneys** (the urinary system).



Urinary system

### 3 Excess salts and excess water

are expelled outside the body through :

- ⊙ The **urinary system** in the form of **urine**.
- ⊙ The **skin** by secreting **sweat** from special glands in the skin called **sweat glands**.



Skin

Urinary system

release  
urine  
kidneys

يُطلق exhalation process  
البول sweat glands  
الكلى sweat

عملية الزفير skin  
غدد العرق  
عرق

الجلد



## LESSON 2

## Notes



- Sweat glands are special type of glands inside the skin that produce sweat.
- Secreting sweat **increases in summer** due to high temperature so, the urination process **decreases**.

## G.R.

- **The skin is one of the excretory organs.**  
Because it gets rid of some excess salts and excess water in the form of sweat.
- **Body cells release their wastes into blood.**  
Because blood carries these wastes to special organs to get rid of them.

⊙ **Comparison between excretory materials and solid materials :**

Points of comparison	Excretory materials (cell wastes)	Solid wastes
• Definition :	They are waste materials formed inside the body cells and carried by blood to special organs to get rid of them.	They are indigested food which is stored in the large intestine before passing out of the body.



## Question

Write the scientific term :

1. The indigested food stored in the large intestine until it passes out of the body. ( ..... )
2. The excretory material produced from burning the digested food and released out of the body through the two lungs. ( ..... )
3. The organs that get rid of urea and uric acid. ( ..... )

## Answers

1. Solid wastes.
2. Carbon dioxide.
3. The two kidneys.

secreting

إفراز urination process

عملية التبول

المعاصر علوم لغات (شرح) / د/ تيرم ٢ (م : ١٠)

73



## Unit 2

## The urinary system

The urinary system

- It is the system that clarifies blood from (gets rid of) the nitrogenous wastes, excess salts and excess water.

Or

- The group of organs that clarifies the body from the wastes and harmful substances.

## Location

It lies in the **abdominal cavity** near the backbone.

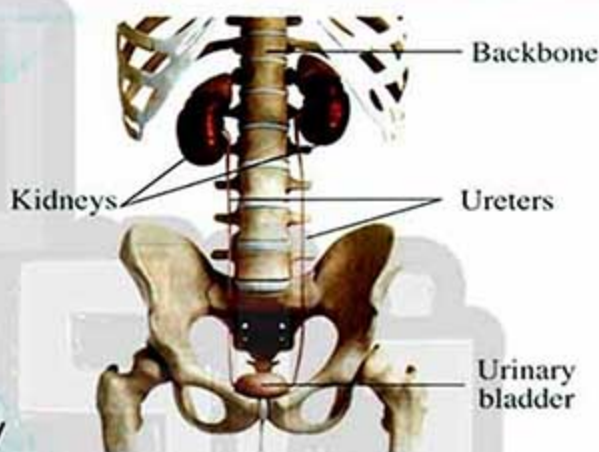
## Functions

1. It filters blood from **excess salts, urea, uric acid** and other **waste materials**.
2. It expels these wastes outside the body in the form of **urine**.

## Structure

The human urinary system consists of three parts which are :

1. The two kidneys.
2. The two ureters.
3. The urinary bladder.



## Exercise

**Complete the following sentences :**

1. The human urinary system consists of the two kidneys, ..... and .....
2. The human urinary system lies in the ..... cavity.

clarifies      يُنقى      abdominal cavity      التجويف البطنى      backbone      العمود الفقري      urinary bladder      المثانة  
filter      يَرْشَحُ      removes      يُزِيلُ      ureter      الحالب



## LESSON 2

**Artery :**

It carries blood containing **nitrogenous wastes** to the two kidneys.

**Vein :**

It carries the **pure blood** which is filtered by the two kidneys to the heart which pumps it to the other body parts.

**1 The two kidneys :**

- They are the **most** important organs of the urinary system.
- They are bean shaped organs located on both sides of the backbone.

**⊙ Their functions :**

1. Filtering blood from urea, uric acid, excess salts and other waste materials.
2. Getting rid of these wastes in the form of urine.

**2 The two ureters :**

They are **two narrow** tubes that connect the two kidneys to the urinary bladder.

**⊙ Their function :**

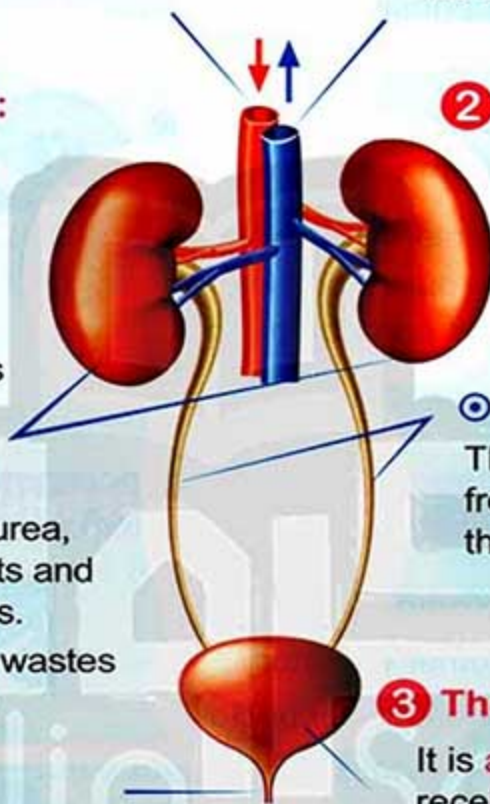
They transfer the urine from the two kidneys to the urinary bladder.

**3 The urinary bladder :**

It is a **balloon like sac** that receives the urine from the two ureters.

**⊙ Its function :**

It stores urine temporarily until it is released outside the body through urethra.

**Urethra :**

- It is a tube which extends from the urinary bladder and opens outside the body.
- It allows urine to pass outside the body.

pure blood	الدم النقي	narrow
bean shaped	شبه حبه الفاصوليا	sac
urethra	مجرى البول	extends

ضيق	connect	يوصل
كيس	temporarily	مؤقتاً
يمتد	transfer	ينقل

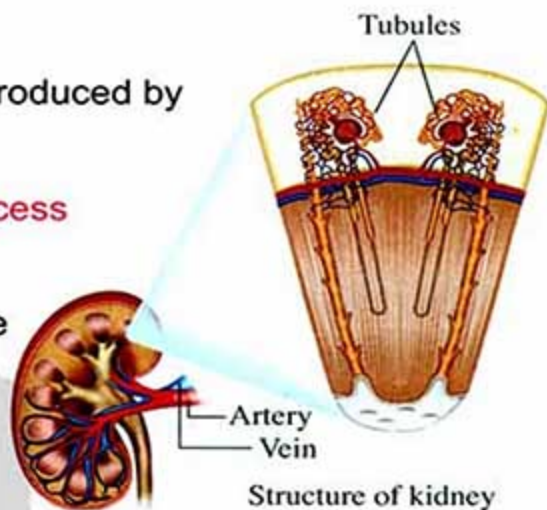


## Unit 2

## Notes



- Urine is a fluid of harmful wastes which is produced by the two kidneys.
- Urine consists of water containing some **excess salts, urea and uric acid**.
- Each kidney contains about **one million** minute tubules that filter blood from wastes.
- Blood containing wastes enters the kidneys through **arteries**, while the pure blood leaves kidneys through **veins** that carry blood to the heart.



### How can the body get rid of some excess salts through skin ?

- The body can get rid of some excess salts and some other excretory products by secreting **sweat** from special glands in the skin called **sweat glands**.



### Do you know ?

- Man needs to drink two liters of water daily, while he excretes about 1.5 liters of urine per day.
- Doctors can diagnose many diseases by examining a report of urine analysis.
- Bloody urine indicates the infection of the **urinary tract** with a disease.
- Diseased or injured kidneys (renal failure) may cause poisoning.

minute  
renal failure  
bloody urine

دقيقة tubules  
الفشل الكلوي urinary tract  
بول دموي

أنابيب رفيعة جدًا urine analysis  
القناة البولية injured kidney

تحليل بول  
الكلية المصابة



## LESSON 2

## How to keep the urinary system healthy

- 1 Drink appropriate (suitable) amounts of clean water daily especially in summer.



- 2 Eat balanced healthy food that is low in salts.



- 3 Keep away from irrigation canals and avoid urinating in them, to avoid schistosomiasis disease (bloody urine).



- 4 Don't keep urine in the urinary bladder for long periods, because this affects the function of kidneys.



## G.R.

**You must drink more clean water in summer.**

Because the body produces (secretes) more sweat in summer.



Try to answer

Test yourself 6

\* Model Exam on unit 2

irrigation canals  
keep away

قنوات الري  
ابتعد عن

schistosomiasis disease  
appropriate

مرض البلهارسيا  
كافئ

urinating

التبول



# Remember

- Wastes that expelled outside the body are :
  - Solid wastes.
  - Excretory wastes.

## Excretory wastes include :

1. Carbon dioxide expelled outside the body through the two lungs during exhalation.
  2. Nitrogenous wastes (urea and uric acid) expelled outside the body through the urinary system
  3. Excess salts and excess water expelled outside the body through the skin and the urinary system.
- Skin gets rid of sweat (excess salts and excess water) through sweat glands.
  - Urinary system lies in the abdominal cavity.

## Urinary system consists of :

### 1 Two kidneys.

The two kidneys are bean shaped organs located on both sides of the backbone.

### 2 Two ureters.

The two ureters are narrow tubes that connect the two kidneys to the urinary bladder.

### 3 Urinary bladder.

The urinary bladder is a balloon like sac that receives the urine from the two ureters.

## To keep the urinary system healthy :


1. Drink suitable amount of clean water.
2. Eat healthy food low in salts.
3. Keep away from irrigation canals.
4. Don't keep urine in the urinary bladder for long periods.







# Questions

## on lesson two

Questions signed by  have been taken from the school book.



### 1. Choose the correct answer :

- ..... are the indigested food stored in the large intestine until it passes out of the body.
  - Excretory wastes
  - Cell wastes
  - Solid wastes
  - Carbon dioxide and water vapour
- All the following are from the excretory materials except .....
  - carbon dioxide.
  - nitrogenous wastes.
  - excess salts.
  - solid wastes.
- Urea and uric acid are produced from breaking down of .....
  - proteins.
  - fats.
  - salts.
  - carbohydrates.
-  Carbon dioxide and water vapour are released by the .....
  - heart.
  - lungs.
  - kidneys.
  - stomach.
-  Urea is expelled by the .....
  - heart.
  - stomach.
  - lungs.
  - kidneys.
- Body cells release their wastes to blood through the .....
  - arteries.
  - veins.
  - cells.
  - blood capillaries.
- The excess salts are expelled outside the body through the .....
  - urinary system.
  - skin.
  - heart.
  - (a) and (b).
- The urinary system expels the nitrogenous wastes in the form of .....
  - urine.
  - sweat.
  - blood.
  - water.
- ..... system clarifies blood from urea, uric acid, excess salts and excess water.
  - The urinary
  - The digestive
  - The circulatory
  - No
- Urinary system is located in the ..... cavity.
  - chest
  - abdominal
  - mouth
  - (a) , (b) and (c)
- Your body can get rid of some excess salts and water through .....
  - skin.
  - lungs.
  - heart.
  - artery.
- ..... is (are) located on both sides of the backbone.
  - Two kidneys
  - Urethra
  - Urinary bladder
  - Heart



## Unit

## 2

13. The kidneys are the main organs in the ..... system.  
a. digestive      b. circulatory      c. urinary      d. nervous
14. .... is the narrow tube that allows urine to reach the urinary bladder.  
a. Urethra      b. Ureter      c. Kidney      d. Artery
15. The urinary system consists of all the following organs except .....  
a. urethra.      b. kidneys.      c. ureters.      d. gall bladder.
16. .... is a special type of glands that produces sweat.  
a. Salivary gland      b. Liver  
c. Sweat gland      d. Skin
17. .... is responsible for storing urine temporarily.  
a. Ureter      b. Kidney  
c. Urinary bladder      d. Urethra
18. .... is a tube that extends from the urinary bladder and opens outside the body.  
a. Ureter      b. Kidney      c. Heart      d. Urethra
19. Swimming in irrigation canals causes ..... disease.  
a. schistosomiasis      b. heart  
c. influenza      d. (a) , (b) and (c)
20. To maintain the urinary system healthy, you must follow all the following except .....  
a. drinking suitable amounts of water.  
b. urinating in irrigation canals.  
c. avoid keeping urine for long times.  
d. eating balanced food that is low in salts.

## 2. Choose from column (B) what suits it in column (A) :

(A)	(B)
1. The kidney	a. stores the urine temporarily.
2. The ureter	b. gets rid of some of the excess salts.
3. The urinary bladder	c. filters blood from wastes.
4. The skin	d. is a narrow tube.
	e. removes carbon dioxide from the body.

1. ....      2. ....      3. ....      4. ....

## 3. Put (✓) in front of the correct statement or (✗) in front of the incorrect one, then correct it :

1. Carbon dioxide is produced from the burning of the digested food. ( )



## QUESTIONS LESSON 2






2. The body gets rid of carbon dioxide gas through the urinary system during exhalation. ( )
3. Lungs have a role in the excretion process. ( )
4. Nitrogenous wastes are produced from breaking down of proteins. ( )
5. Excess salts and water which pass out of the body through skin are called urine. ( )
6. Nitrogenous wastes are removed out of the body through skin. ( )
7. The urinary system is located in the abdominal cavity. ( )
8. The digestive system consists of two kidneys, two ureters and urinary bladder. ( )
9. The two kidneys are located on both sides of the heart. ( )
10. The kidneys filter blood from nitrogenous wastes and some excess salts and water in the form of sweat. ( )
11. The kidney is a pear shaped organ. ( )
12. The two narrow tubes that connect the two kidneys to the urinary bladder are called urethra. ( )
13. Urine is composed of urea, uric acid, excess salts and water. ( )
14. Skin gets rid of some of excess salts and excess water through sweat glands. ( )
15. Urination process increases in winter than in summer. ( )
16. Blood enters the kidney through veins. ( )
17. Urine passes outside the body from the urinary bladder through ureters. ( )
18. You must eat balanced food that contains much salt to keep the urinary system healthy. ( )
19. Avoid urinating in irrigation canals to protect yourself from schistosomiasis disease. ( )

## 4. Write the scientific term of each of the following :

1. The waste materials that are produced inside the body cell. ( ..... )
2. The indigested food stored in the large intestine until it passes out of the body. ( ..... )
3. The waste materials produced from burning the digested food with oxygen and released out of the body through the two lungs. ( ..... )



## Unit 2

4.  The system that clarifies blood from excess salts, urea and uric acid. (.....)
5.  The two organs that clarify the body from cell wastes and harmful substances. (.....)
6.  The two organs which get rid of carbon dioxide and excess water in the form of water vapour. (.....)
7.  The fluid produced by the kidneys and contains harmful substances. (.....)
8. The bean-shaped organs which are located on both sides of the backbone. (.....)
9.  The narrow tube which is connected to the kidney and urine passes through it. (.....)
10. The organ which allows the urine to pass from the kidney to the urinary bladder. (.....)
11. The balloon like sac organ that stores urine temporarily. (.....)
12. The tube extends from the urinary bladder and opens outside the body. (.....)
13. The blood vessel that allows blood to enter the kidney. (.....)
14. The blood vessel that carries the purified blood from the kidney. (.....)
15. The type of glands that get rid of excess salts and excess water through skin. (.....)
16. The organ that gets rid of excess water and excess salts only. (.....)
17. The liquid which is produced by the sweat glands in the skin. (.....)

**5. Complete the following statements :**

1. .... and .... are the two types of wastes that expelled outside the body.
2. .... are the indigested food stored in the large intestine.
3. The .... are waste materials that produced inside the body cells.
4. The excretory materials contain ..... materials and ..... materials.
5. The excretory materials contain some ..... materials that the body must get rid of them.



6. .... and .... are from the excretory materials produced from burning the digested food with oxygen.
7. .... and .... are produced from breaking down of proteins and are known as .....
8. We can get rid of the excretory materials as carbon dioxide and water vapour through .....
9. The body cells release their wastes to the blood through .....
10. Nitrogenous wastes are removed from the blood through the ..... system.
11. 📖 The body gets rid of excess salts and water only through ..... , while it gets rid of carbon dioxide through .....
12. Getting rid of excess salts takes place through ..... and .....
13. 📖 The urinary system is located inside the ..... cavity.
14. The ..... system consists of ..... , ..... and the urinary bladder.
15. 📖 ..... are the main organs in the urinary system.
16. Kidneys are located on both sides of the .....
17. 📖 ..... is an organ in the urinary system that responsible for filtration of blood from wastes.
18. The urinary system filters the blood from ..... , ..... and .....
19. 📖 The kidney excretes the wastes dissolved in water in the form of .....
20. 📖 ..... is connected to the kidney and carries the urine into .....
21. 📖 Urine consists of water containing some excess salts, ..... and .....
22. 📖 The tube which extends from the urinary bladder and opens outside the body is called .....
23. A kidney is a ..... shaped organ.
24. Blood enters the kidneys through ..... , while it leaves them through .....
25. Each kidney contains about ..... minute tubules that filter blood from wastes.
26. The ..... stores the urine until it is released outside the body.
27. The urine is expelled outside the body from the urinary bladder through .....



## Unit 2

28. Sweat glands get rid of ..... in the form of .....
29. You should drink a suitable amounts of ..... especially in .....
30. You must not urinate in irrigation canals to avoid ..... disease.

**6. Give reasons for the following :**

1. The human body must get rid of the excretory materials.


.....

.....

2. Body cells release their wastes into the blood.

.....

.....

3.  The skin is one of the excretory organs.

.....

.....

4.  Faces cannot be considered as an excretory material.

.....

.....

5. The urinary system is very important.


.....

.....

6. The urinary system contains urinary bladder.

.....

.....

7.  If the two kidneys are damaged, the person will die.


.....

.....

8. There are two ureters in the urinary system.


.....

.....

9.  Man urinates less in summer than in winter.

.....

.....

10.  Sweat has salty taste.

.....

.....

11. The presence of sweat glands in the skin.

.....

.....

12. You must not keep urine for a long time.

.....

.....

13. You must not urinate or wash in the irrigation canals.

.....

.....





14. You must eat food low in salts.

.....




.....




**7. What happens if ... ?**

1.  The human body can't get rid of its waste materials.  
.....
2.  The two kidneys can't work properly.  
.....
3. The urinary bladder is removed.  
.....
4. There are no ureters in the urinary system.  
.....
5. There are no sweat glands in the skin.  
.....
6.  The human body keeps urine for a long period of time.  
.....
7.  Eating food containing a lot of salt.  
.....
8. You drink a little amount of water daily.  
.....

**8. State the function of each of the following :**

1.  The kidney.  
.....
2.  The ureter.  
.....
3.  The urinary bladder.  
.....
4. Urethra.  
.....
5. Skin.  
.....

**9. What is meant by ... ?**

1. Nitrogenous wastes.  
.....  
.....
2.  Excretory materials.  
.....  
.....  
.....



## Unit

## 2

3. The urinary system.

.....

.....

.....

4. The kidneys.

.....

.....


.....

5.  The ureters.

.....

.....

.....

6.  The urinary bladder.

.....

.....

.....

7. Urethra.

.....

.....

.....

### 10. Answer the following questions :

1. How can the body cells produce carbon dioxide and nitrogenous wastes ?

.....

.....


.....

2. Explain the role of blood in getting rid of the cell wastes.

.....

.....

.....

3.  How can you keep your urinary system healthy ?

.....

.....

.....

### 11. Examine the opposite figure, then complete :

1. The figure represents the .....

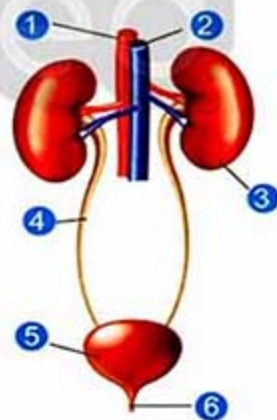
2. The most important structure in this figure is part number ..... that its function is .....

3. The organ which stores urine is symbolized by number .....

4. The structure number ..... carries the urine from the kidney to the .....

5. Blood in blood vessel number ..... carries blood containing waste materials to the kidneys, while the blood in blood vessel number ..... carries filtered blood from the kidneys to the heart.

6. The organ number ⑥ is called ..... which allows ..... to pass outside the body.







## Timss Questions

1. The following table represents some properties of some waste materials inside your body.

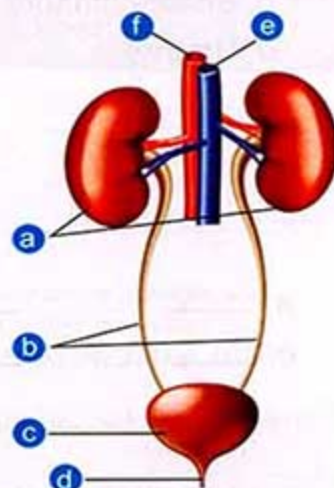
Read them, then complete the sentences below :

Material (1)	Material (2)	Material (3)	Material (4)
<ul style="list-style-type: none"> <li>- It is indigested food.</li> <li>- It is stored in the large intestine.</li> <li>- It passes out of the body through the digestive system.</li> </ul>	<ul style="list-style-type: none"> <li>- It is produced during burning the digested food.</li> <li>- It is removed by the two lungs.</li> <li>- It comes out of the body during exhalation.</li> </ul>	<ul style="list-style-type: none"> <li>- They are produced from breaking down of proteins.</li> <li>- They are removed by the two kidneys.</li> <li>- They come out of the body in the form of urine.</li> </ul>	<ul style="list-style-type: none"> <li>- They can be removed by the urinary system or by skin.</li> <li>- They come out of the body in the form of sweat or urine.</li> </ul>

- Solid waste is material number .....
- Excess water and excess salts only are material number .....
- Carbon dioxide is material number .....
- Urea and uric acid are material number .....

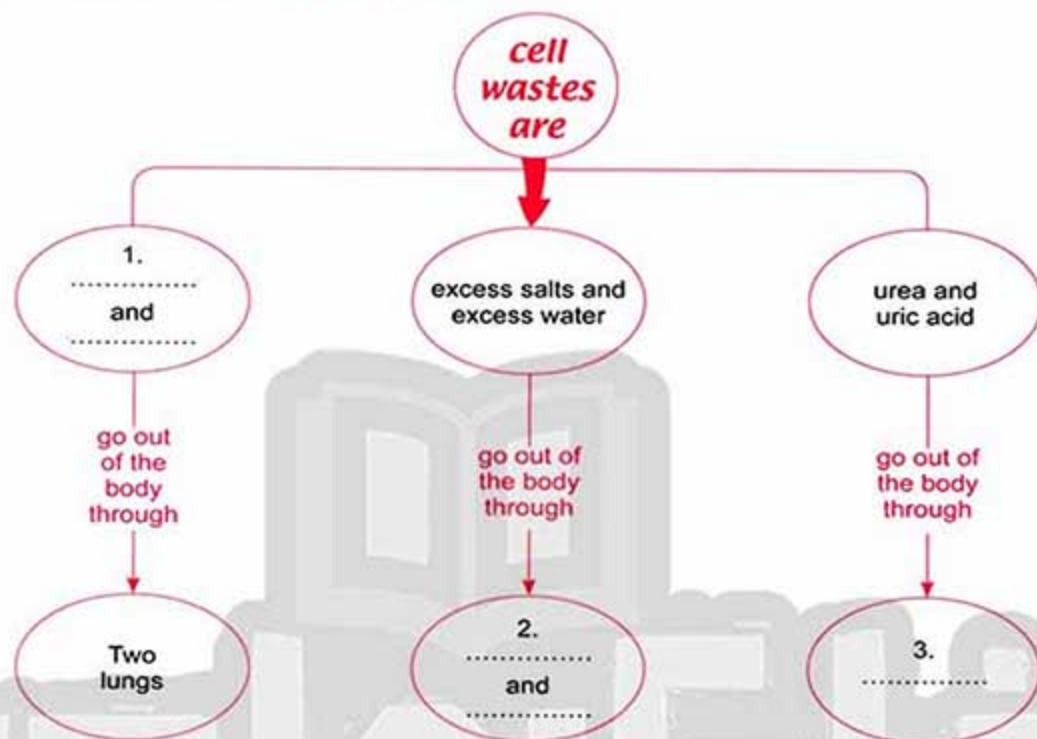
2. Look at the opposite figure, then answer the following questions by putting the letters that represent the sentence :

- They transfer urine to the urinary bladder. (.....)
- It carries pure blood that is filtered by the kidneys. (.....)
- It allows urine to pass outside the body. (.....)
- They filter blood from urea, uric acid, excess salts and water. (.....)
- It carries blood containing wastes to the two kidneys. (.....)
- It stores urine. (.....)





## 3. Complete the following diagram :



## 4. Choose from columns (B) and (C) what suits them in column (A) :

(A)	(B)	(C)
a. Two ureters.	1. Bean shaped organs.	e. Stores urine.
b. Two kidneys.	2. A balloon like sac.	f. Allows urine to pass outside the body.
c. Urinary bladder.	3. Narrow tubes connected to the kidneys.	g. Transfer urine to the urinary bladder.
d. Urethra.	4. A tube extends from urinary bladder.	h. Filter blood from urea, uric acid, excess water and salts.

a. → ..... → .....

b. → ..... → .....

c. → ..... → .....

d. → ..... → .....



## UNIT

## 3

## The Soil

**Lessons of the unit :**

1. Soil components.
2. Types and properties of soil.
3. Soil pollution and protection.

**Unit Objectives:** By the end of this unit, you will be able to :

- Identify the soil as a part of Earth's crust.
- Differentiate between the soil components.
- Describe how Egypt's agricultural soil was formed.
- Identify some types of soil (clay, sand and silt soils).
- Perform experiments to compare between soil types according to their colour, particles size, compactness, aeration, water absorption, fertility and drainage of water.
- Name kinds of plants that suit each type of soil.
- Identify soil pollutants.
- Identify the methods that control soil pollution.





LESSON

1

## Soil Components

Have you ever planted some seeds in the soil of a garden?

If so, you may observe that soils are different in :

1. The colour of soil which helps scientists to identify the elements and minerals inside it.
2. The texture of soil which is smooth or granular or rocky rough.



But, What is meant by soil ?

### Soil

It is a thin non-compacted (loose) superficial (upper) layer which covers the Earth's crust.

In this lesson we are going to study :

- Soil components.
- The importance of soil.
- The formation of soil.
- Soil layers and living organisms.

soil	تربة	minerals	المعادن	rocky rough	خشن صخري
components	مكونات	thin	رفيعة	non-compacted (loose)	مفككة
superficial layer	الطبقة السطحية	Earth's crust	القشرة الأرضية	texture	لمس
granular	حبيبي				



## Soil components

Soil is made up of many components such as

- 1 Pieces of rocks    2 Water    3 Air    4 Silt    5 Humus



## Activity 1

To prove that soil is composed of many components.

Steps	Figure	Observation
<ol style="list-style-type: none"> <li>1. Fill a graduated cylinder or a jar up to the middle with a sample of your school garden soil.</li> <li>2. Fill the cylinder with water and cover it tightly.</li> <li>3. Shake the cylinder strongly, then put it on a table and leave it for 15 minutes.</li> </ol>		Soil is composed of different components as shown in the opposite figure.

## Conclusion :

Soil is composed of humus, water, sand, clay(mud), silt and gravel

## Notes

- The variation in types of soil depends on the type of rocks and minerals.
- Rocks are the main source of sand, clay and minerals.

humus  
gravel  
silt

دُبال shake  
حصي sample  
طمي up to the middle

برج clay (mud)  
عينة tightly  
حتى المنتصف variation

طين  
بإحكام  
التنوع



## Unit 3

## But, What is meant by humus ?

**Humus**

It is the decayed remains of animals and plants mixed with the soil components and its colour is dark brown or black.

**How is humus formed ?**

- When the living organisms (plants or animals) die, their bodies decay (break down or rot) forming humus.
- Humus adds **nutrients** to soil.
- Humus affects the **colour** of the soil, as its colour is **dark brown** or **black**.

**G.R.**

The colour of soil is dark brown.

Due to the colour of humus which is dark brown or black.

**Question**

Complete the following statements :

1. .... is a thin non-compacted superficial layer which covers the Earth's crust.
2. .... is the decayed remains of animals and plants mixed with the soil.
3. The variation in types of soil depends on the type of ..... and .....

**Answers**

1. Soil

2. Humus

3. rocks – minerals.

## Now, can you imagine what happens if there is no soil ?

To answer this question, you must know first the importance of soil for all living organisms such as plants, animals, human and also some other living organisms such as ants, spiders and earthworms.

decayed remains  
nutrients  
imagine  
earthworms

بقايا مُتحللة rot  
مواد غذائية ants  
بتخيل spiders  
دود الأرض

بتعفن  
غُل  
عناكب



## The importance of soil :

Soil is one of the main component of the environment as it is necessary for all living organisms (plants, animals and human).

**Where :**

### Plants

Plants take minerals and other nutrients from soil to live and grow.



### Animals

Animals eat plants that previously depend on soil to grow.



### Other Living Organisms

Some living organisms (such as earthworms, spiders and ants) make their homes (shelters) in soil.



### Human

Human eats plants and animals that previously depend on soil to grow.



Try to answer  
Test yourself **7**

previously

سابقاً environment

البيئة shelter

depend on مأوى / مسكن

يعتمد على



## Unit 3

## The formation of soil :



Soil is formed from the breaking down of rocks by several factors as :

## 1 Running water

Where water breaks down rocks into small pieces which form soil.



## 2 Winds

They break down rocks forming soil.



## 3 Heat and rains

They break down rocks by time forming soil.



## How was the soil of Egypt formed ?

The origin of the soil of Egypt is the rocks of the Ethiopian plateau, where :

1. When the rocks of the Ethiopian plateau are exposed for millions of years to several factors (as heat, winds, rains and running water), they are broken into small particles with different sizes and shapes.

2. The flood water carried these particles of rocks to the River Nile, then to the Nile Valley, where they are deposited year after year as layers of clay (mud) and silt.

3. Clay and silt are rich in elements that are necessary for plant growth.



Ethiopian plateau and formation of the soil of Egypt

origin

flood water

minerals

deposited

منشأ

مياه الفيضان

المعادن

يترسب

winds

Ethiopian Plateau

River Nile

الرياح

هضبة الحبشة

نهر النيل

by time

Nile valley

factors

بمرور الوقت

وادي النيل

عوامل



## Soil layers and living organisms

The following figure shows that soil is composed of three layers, which are :

1 Top soil layers

2 Lower soil layers

3 Rocky layers

### 1 Top soil layers

They contain :

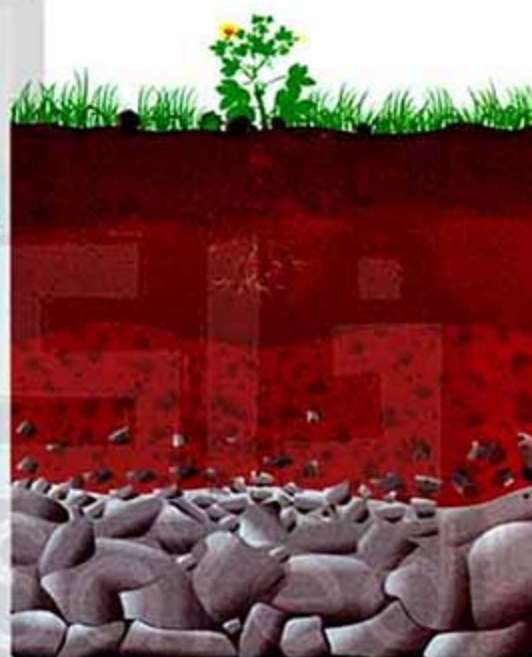
- Roots of plants.
- Leaves of plants.
- Living organisms as earthworms and ants.
- Humus.
- Small pieces of rocks may be found.

### 2 Lower soil layers

- They lie beneath (under) the top soil layers.
- They don't have much humus.

### 3 Rocky layers

The upper part of the rocky layers contains pieces of rocks, while its lower part contains solid rocks.



Soil layers

**Now**, we are going to study some components present in the top soil layers such as roots of plants, leaves of plants and living organisms that live in it.

top soil layers  
roots  
lie

الطبقات العليا للتربة  
جذور  
تقع

lower soil layers  
plant leaves

الطبقات السفلى للتربة  
أوراق النبات

beneath  
rocky layers

اسفل  
الطبقات الصخرية



### Roots of plants

They extend deeply in the top soil layers.

**Their importance for plants :**

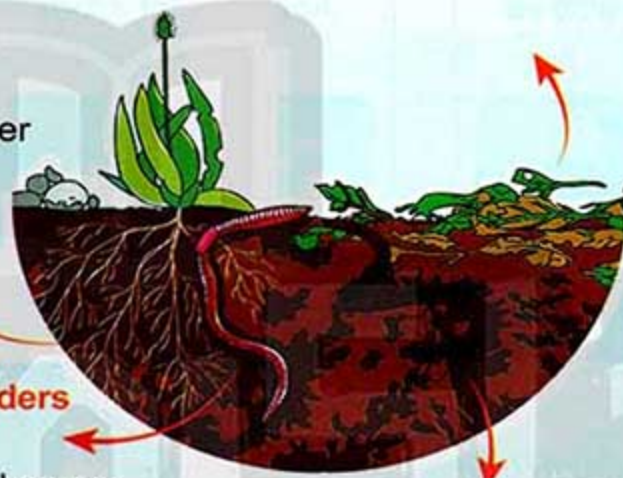
- They take water and nutrients from soil.
- They fix plants in the soil.

**Their importance for soil :**

- They help the soil to be cohesive.
- They prevent the soil erosion from happening quickly.
- They provide the soil with nutrients as they are converted into humus after death.

### Leaves of plants

- They are parts of plants exist in the top soil layers.
- Leaves and other parts of plants fall to the soil, then they decay forming humus.



### Earthworms and some spiders

The soil is considered the shelter for earthworms and some spiders, because they make their homes underground by digging tunnels.

**Their importance for the soil and plants :**

They dig tunnels in the soil that allow air, water and nutrients to pass easily through the soil, then to the plant roots.

### Ants and other insects

They dig tunnels in the soil to make nests and lay eggs.

**Their importance for the soil :**

When these organisms die, their bodies decay forming humus.

## Exercise

**Why is soil very important for ants, earthworms and some spiders ?**

.....

.....

extend  
cohesive  
dig  
nests

يُمتد deeply  
مُلتصقة provide  
يحفر tunnels  
عش lay eggs

يُعمق fix  
يُد soil erosion  
انفاق converted into  
يضع بيض

يُثبت  
تأكل التربة  
يتحول إلى



## LESSON 1

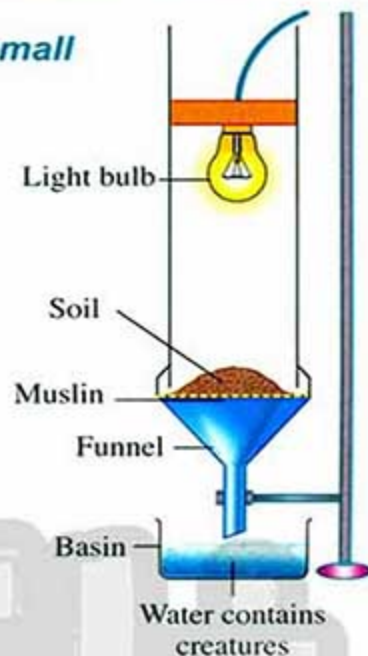
## Activity 2

To prove that soil contains small animals or creatures.

The opposite apparatus can be used to extract small animals (creatures) from the soil.

## Steps:

1. Put about 250 gm. of soil on a piece of muslin, then put it on the top of a funnel.
2. Put a basin of water under the funnel.
3. Focus light on the funnel.



## Observations:

- The creatures that are present in the soil escape from light as they prefer darkness.
- The creatures are collected in water under funnel.

## Conclusion :

Soil contains small animals (creatures).



Try to answer  
Test yourself 8

creatures  
darkness  
focus

مخلوقات apparatus  
الظلام escape  
يُسلط beneath

جهاز funnel  
بهرج muslin  
أسفل basin

قمع  
شاش  
حوض

المعاصر علوم لغات (شرح) / ٥٥ / نهر ٢ (م : ١٣)

97



# Remember

- Soil : It is a thin non-compacted (loose) superficial (upper) layer which covers the Earth's crust.




- Rocks are the main source of sand, clay and minerals of soil.
- Humus** : It is the decayed remains of animals and plants mixed with the soil components and its colour is dark brown or black.
- Soil is formed from the breaking down of rocks by several factors such as :**
  - Running water.
  - Winds.
  - Heat and rains.
- The origin of the soil of Egypt is the rocks of the **Ethiopian Plateau**.
- Soil is composed of three layers, which are :**
  - Top soil layers.
  - Lower soil layers
  - Rocky layers.
- Living organisms that live in soil dig tunnels in the soil that allow air, water and nutrients to pass easily through the soil.





## Questions

## on lesson one

Questions signed by  have been taken from the school book.



## 1. Choose the correct answer :

- The loose upper layer that covers the Earth's crust is called .....  
a. soil.                      b. humus.                      c. silt.                      d. gravel.
- All the following are from the soil components except .....  
a. pieces of rocks.      b. humus.                      c. sand.                      d. milk.
- The main components of soil are .....  
a. pieces of rocks.                      b. air and water.  
c. silt and humus.                      d. (a) , (b) and (c).
- The pieces of rocks are composed of .....  
a. clay.                      b. sand.  
c. minerals.                      d. all the previous answers.
- The variation in types of soil depends on .....  
a. the type of rocks.                      b. the type of minerals.  
c. the amount of water.                      d. (a) and (b).
- ..... is one of the main components of soil that its colour is black and is produced from the decay of the remains of animals and plants.  
a. Sand                      b. Humus                      c. Silt                      d. Clay
- Which of the following is one of the soil components that adds nutrients to soil and affects the colour of soil ? .....  
a. Sand.                      b. Silt.                      c. Clay.                      d. Humus.
- When you shake a mixture of soil and water, then leave it for 10 minutes, ..... settles down.  
a. silt                      b. clay                      c. gravel                      d. humus
- The soil colour changes usually between black and dark brown due to the presence of .....  
a. sand.                      b. humus.                      c. rocks.                      d. spiders.
- Soil is important for plant as .....  
a. it provides it with nutrients and minerals.  
b. it represents the home of some animals.  
c. some animals depend on plants in feeding.  
d. no correct answer.
- Soil can be formed by the effect of ..... on rocks.  
a. running water                      b. winds  
c. heat and rains                      d. all the previous answers



## Unit

## 3

12. The origin of the agricultural soil in Egypt is the ..... plateau.  
a. Tibet                      b. Golan                      c. Ethiopian                      d. Red Sea
13. The source of the Nile valley soil is the .....  
a. Sudan plateau.                      b. Ethiopian plateau.  
c. Nile Delta.                      d. Aswan hills.
14. The particles of rocks of the Ethiopian plateau are carried by the flood water to the Nile valley to be deposited as .....  
a. layers of clay and silt.                      b. layers of sand and silt.  
c. layers of gravel.                      d. layers of humus.
15. The soil is composed of .....  
a. top soil layers only.                      b. lower soil layers only.  
c. rocky layers only.                      d. all the previous answers.
16. The top soil layers contain .....  
a. roots of plants only.                      b. humus only.  
c. worms, ants, spiders and some insects.  
d. all the previous answers.
17. The soil benefits from the living organisms that exist in it in .....  
a. digging tunnels that allow air, water and nutrients to pass easily through soil.  
b. helping the soil to be cohesive.  
c. forming humus.                      d. (a) and (c).
18. All the following are from the importance of plant roots to soil except .....  
a. preventing the soil erosion.                      b. digging tunnels.  
c. helping the soil to be cohesive.                      d. adding nutrients to soil.
19. .... help the soil to be cohesive.  
a. Roots of plants                      b. Earthworms and spiders  
c. Ants                      d. Leaves of plants
20. .... dig tunnels in the soil to make nests.  
a. Earthworms                      b. Some spiders  
c. Ants and other insects                      d. Plant roots
21. The importance of roots for plants is .....  
a. preventing the soil erosion.  
b. providing soil with humus after death.  
c. fixing the plant in the soil.  
d. helping the soil to be cohesive.



22. Earthworms and spiders are necessary for the soil and plants as .....
- they lay eggs.
  - they provide the plants with water and salts.
  - their tunnels allow air, water and nutrients to pass easily through soil, then to plant roots.
  - they fix plants in the soil.

**2.** Put (✓) in front of the right statement and (×) in front of the wrong one, then correct it :

- Soil is a thin compacted superficial layer which covers the Earth's crust. ( )
- The texture of soil is smooth or granular or rocky rough. ( )
- The main components of soil are sand and clay only. ( )
- Air and silt are from the components of the soil. ( )
- Soil is considered as a shelter for some living organisms as earthworms and some other insects. ( )
- The colour of the soil is dark brown due to the presence of humus. ( )
- Minerals result from breaking down rocks. ( )
- Running water is the only factor to break down rocks forming soil. ( )
- The origin of the soil of Egypt is the Sudan plateau. ( )
- Heat, winds, rains and running water break down the rocks of the Ethiopian plateau into small particles. ( )
- Soil is composed of two layers only. ( )
- Humus is a black material formed in the rocky layers. ( )
- The upper rocky layers contain solid rocks. ( )
- Top soil layers contain roots of plants and humus only. ( )
- The leaves of plants is important for preventing soil erosion. ( )
- When earthworms, spiders, plants and ants die, silt is formed. ( )
- Among the importance of roots for plants is the fixing of plant in the soil. ( )
- Helping soil to be cohesive is one of the importance of earthworms for the soil. ( )
- The tunnels formed by earthworms and ants allow air, water and nutrients to pass easily through soil. ( )



## Unit 3

## 3. Write the scientific term of each of the following :

1. A thin non-compacted layer that covers the Earth's crust. (.....)
2. The decayed remains of living organisms that exist in the soil. (.....)
3. A loose layer that covers the Earth's crust and composed of humus, water, sand, clay (mud), silt and gravel. (.....)
4. A dark brown material that affects the colour of the soil. (.....)
5. The origin of the soil of Egypt. (.....)
6. The remains of the decayed organisms. (.....)
7. A black material that adds nutrients to soil. (.....)
8. Layers of soil that contain roots of plants, living organisms and humus. (.....)
9. Soil layers that lie beneath the top soil layers and don't have much humus. (.....)
10. Parts of plants that prevent soil erosion and help the soil to be cohesive. (.....)
11. Layers that lie beneath the lower soil layers and contain pieces of rocks. (.....)
12. Black material that exists in the top soil layers. (.....)

## 4. Complete the following statements :

1. .... is a thin non-compacted superficial layer which covers .....
2. The soil contains gravels produced from breaking down of .....
3. The main soil components are rocks, silt ..... , ..... and .....
4. The variation in types of soil depends on the type of ..... and .....
5. Humus adds nutrients to .....
6. .... is the decayed remains of animals and plants mixed with the soil components.
7. .... is one of the soil components whose colour is dark brown or black.
8. .... is composed of decayed materials, water, gravel, silt, clay, sand and minerals resulted from breaking down rocks.
9. Water and ..... break down rocks into small pieces to form soil.



## QUESTIONS LESSON 1

10. The origin of the agricultural soil of Egypt is the rocks of .....
11. ...., running water and ..... break down rocks of the Ethiopian plateau.
12. .... carried the small particles of rocks of the Ethiopian plateau to the Nile valley, where they are deposited as layers of .....
13. Soil is composed of different layers which are ..... and .....
14. .... soil layers contain roots of plants, worms, ants, spiders and humus.
15. .... lie beneath the top soil layers and don't have much humus.
16. .... help the soil to be cohesive.
17. Roots of plants add ..... to soil and prevent ..... from happening quickly.
18. Leaves of plants decay forming .....
19. .... take water and nutrients from soil and fix the plant in soil.
20. Ants dig tunnels in the soil to make ..... and lay .....
21. The tunnels formed by earthworms allow ..... and ..... to pass easily through soil.
22. .... is a dark brown matter present in the upper layers of soil.
23. Soil is considered the shelter for many organisms such as ..... and .....



## 5. Give reasons for the following :

1. The variation in types of soil.  
.....
2. The soil is one of the main components of the environment.  
.....  
.....
3. Soil is necessary for plants.  
.....
4. Soil is very important for animals and humans.  
.....  
.....
5. The colour of soil is dark brown or black.  
.....
6. Running water and winds are from factors that form soil.  
.....



## Unit

## 3

7.  Roots of plants are important for soil.  
.....  
.....
8. A lot of organisms as earthworms and some spiders are important for plants.  
.....  
.....
9. Humus is important for soil.  
.....
10. Ants and other insects are important for soil.  
.....
11. Soil is important for earthworms, ants and some spiders.  
.....
12. Tunnels that are formed by insects and earthworms is important for the soil and plants.  
.....  
.....
13.  The organisms that live inside the soil have great importance.  
.....  
.....

### 6. What is meant by ... ?

1. Soil.  
.....
2. Humus.  
.....  
.....

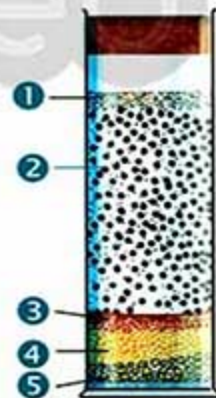
### 7. What happens when ... ?

1. Living organisms die.  
.....
2. There is no soil.  
.....
3. Rocks are exposed to running water and winds.  
.....
4. Rocks of Ethiopian plateau exposed to heat, winds, rains and running water.  
.....  
.....



## QUESTIONS LESSON 1

5. Absence of roots of plants from the soil.  
.....
6. Absence of living organisms from the soil.  
.....
8. How was Egypt's agricultural soil formed ?  
.....  
.....  
.....
9. What are the different components of soil ?  
.....  
.....
10. How do plants and animals affect the soil composition ?  
.....
11. What is the importance of soil as one of the main components of the environment ?  
.....  
.....  
.....
12. The opposite figure represents an experiment to show the soil components. Write the labels :  
 1 .....  
 2 .....  
 3 .....  
 4 .....  
 5 .....



13. Illustrate the factors that help in breaking down rocks into small particles with different sizes.  
.....  
.....





## Timss Questions

1. The following figure represents a part of soil and some microorganisms that live in it.

1. Write the name of this layer.

.....

2. Write the importance of :

a. Roots of plants for soil.

.....

.....

.....

b. Soil for earthworms and some spiders.

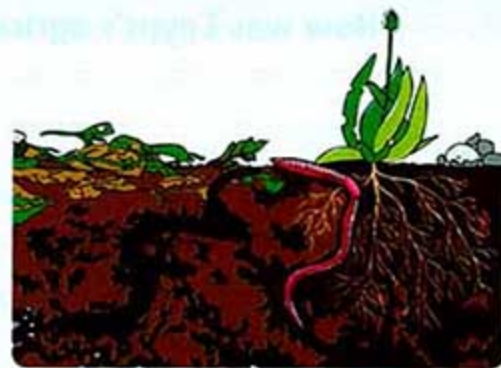
.....

.....

3. Write the importance of ants for soil.

.....

.....



2.

Rocks of ①  
plateau are broken  
into small particles

By

Running water

②

③

Rains

Small particles of  
rocks carried by  
④, then to  
the ⑤ valley.

3. Look at the opposite picture, then answer :

1. What do you see in this photo ?

.....

2. Is the shown organism in this picture  
useful or harmful to soil ?

.....

3. If it is useful, what are its benefits ?

.....

.....







## LESSON

## 2

## Types and Properties of Soil

- Do you think that all the following plants are planted in the same soil or in different soils ?  
Of course they are planted in different types of soils.



Cactus



Cotton



Orange

In this lesson, we are going to study :

- Types of soil.
- Soil and plants.



## Types of soil

Soil can be classified into **three** different types according to the kind of particles (components) that form it.

## Types of soil are

- 1 Sand soil
- 2 Silt soil
- 3 Clay soil

properties

صفات cactus

صبار cotton

تطن



## Unit 3

## 1 Sand soil

Sand soil

It is composed mainly of sand particles, a small amount of clay and silt and rarely contains humus.



⊙ **Properties of sand soil :**

1	Colour	Its colour is yellow.
2	Particles size	The size of its particles is large.
3	Compactness	It is weakly compacted (loose).
4	Aeration and water absorption	It is well aerated soil, so it has the lowest absorption of water.
5	Drainage of water	It has the fastest (or greatest) drainage of water.
6	Fertility	Its fertility is low (less fertile).

rarely  
aeration

نادراً particles  
تهوية drainage

جزينات compactness  
تصرف fertility

نفاذ  
خاصية



## 2 Silt soil

### Silt soil

It is composed of a mixture of equal amounts of gravel, sand, clay and silt, but it contains more humus.



### ⊙ Properties of silt soil :

1	Colour	Its colour is grey.
2	Particles size	The size of its particles is <b>medium</b> (mixture of large and small particles).
3	Compactness	It is moderately compacted.
4	Aeration and water absorption	It is moderately aerated soil, so it has medium absorption of water.
5	Drainage of water	It has medium drainage of water.
6	Fertility	Its fertility is high.

mixture

خليط moderately / medium

متوسط



## Unit 3

## 3 Clay soil

## Clay soil

It is composed mainly of clay and silt particles and a small amount of sand and humus.



⊙ **Properties of clay soil :**

1	Colour	Its colour is dark (black).
2	Particles size	The size of its particles is small.
3	Compactness	It is highly compacted (hard).
4	Aeration and water absorption	It is poorly aerated soil, so it has the highest absorption of water.
5	Drainage of water	It has the slowest drainage of water.
6	Fertility	Its fertility is medium (fertile).

hard

صلبة slowest

بطأً poorly

ردينة






## LESSON 2

Now, we will prove all the properties of the different types of soil by doing the following activities.

# 1 The size of soil particles

## Activity 1

To show the difference between the size of particles of sand, silt and clay soils.

Steps	Figures	Observations
1. Bring three equal samples of sand, silt and clay soils.	 Sand soil	- The size of particles of sand soil is larger than silt soil.
2. Spread out each sample on a white paper or a plate, then examine it by a magnifying glass.	 Silt soil	- The size of particles of silt soil is larger than clay soil.
	 Clay soil	

## Conclusions :

The particles of :

- Sand soil are large in size.
- Silt soil are medium in size.
- Clay soil are small in size.

samples  
spread out

plate  
عُيُنات  
انثر magnifying glass

طبق  
عدسة مكبرة






## Unit 3

## 2 The soil compactness

## Activity

To show the compactness between the particles of sand, silt and clay soils.

Steps	Figures	Observations
1. Put three equal samples of clay, silt and sand soils separately in three dishes.		- The compactness between the particles of clay soil is larger than that of silt soil.
2. Add an amount of water to each sample, then expose the three samples to the Sun and air till they become dry.		- The compactness between the particles of silt soil is larger than that of sand soil.
3. Try to crush each sample by your fingers.		

Clay soil

Silt soil

Sand soil

## Conclusions :

- The particles of clay soil are highly compacted (hard).
- The particles of silt soil are moderately compacted.
- The particles of sand soil are weakly compacted (loose).

separately

crush منفصل

expose to يفتت

يتعرض لـ

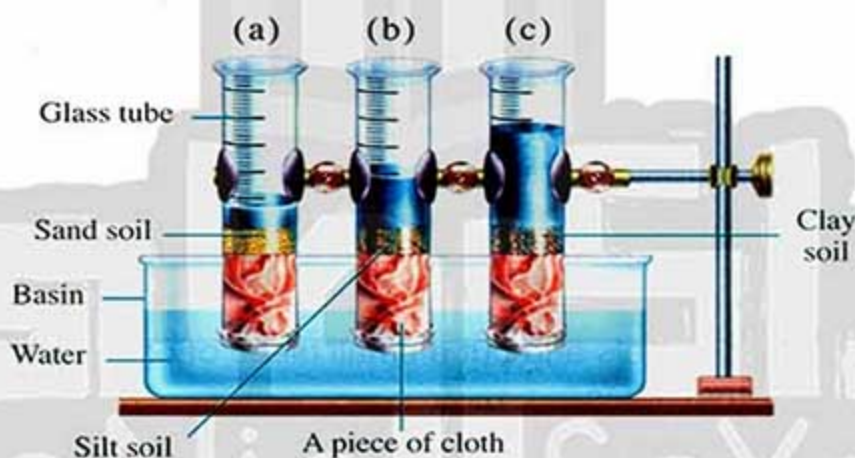


### 3 The aeration and water absorption

**Activity 3** To show the aeration and water absorption in sand, silt and clay soils.

#### Steps:

1. Get three similar glass tubes (a, b, c) opened from both ends.
2. Cover one end of each tube with a piece of cloth as shown in the figure.
3. Put in tube (a) an amount of sand soil, in tube (b) the same amount of silt soil and in tube (c) the same amount of clay soil.
4. Immerse the three covered ends of the three tubes at equal depths in a basin containing water.



#### Observation:

Water rises in the three tubes at different levels, where the water level in tube (c) is larger than that in tubes (a) and (b).

#### Explanation:

- The rise in water level in the three tubes is due to the presence of air spaces (aeration) between the soil particles, where water replaces air.
- The rising of water level (water absorption) increases when the aeration of the soil is poor (bad) and vice versa.
- The reason for well aerated soil is the weak compactness between its particles.

tubes  
basin  
replace

أنابيب immerse  
حوض rise  
يحل محل

agmer depth  
يرتفع air spaces

عمق  
فراغات هوائية



## Unit 3

## Conclusions :

- The sand soil is well aerated soil that has low absorption of water.
- The clay soil is poorly aerated soil that has highly absorption of water.
- The silt soil is moderately aerated soil that has moderately absorption of water.

## G.R.

- The clay soil is poorly aerated.  
Because it has highly compacted particles.
- The silt soil has moderately absorption of water.  
Because it is moderately aerated soil.

## 4 The drainage of water



## Activity 4

To show the drainage of water through sand, silt and clay soils.

## Steps:

1. Bring three similar funnels and put a small piece of cotton in each funnel to close their internal holes.
2. Put three equal samples of sand, silt and clay soils separately in the three funnels.
3. Put a graduated cylinder under each funnel.
4. Pour three equal amounts of water in the three funnels.



funnel  
pour

فُع internal hole  
يصب

الفتحة الداخلية



**Observations:**

- The sand soil drains water faster than silt soil (or silt soil retains more water than sand soil).
- The silt soil drains water faster than clay soil (or clay soil retains more water than silt soil).

**Explanation:**

- When the soil is well aerated or its particles are non-compacted, its ability to drain water increases and vice versa.
- When the drainage of soil for water increases, its retention of water decreases.

**Conclusions :**

- The sand soil has the fastest drainage of water and the lowest retention of water.
- The clay soil has the slowest drainage of water and the highest retention of water.
- The silt soil has the medium drainage of water and the medium retention of water.

**G.R.**

The clay soil has the slowest drainage of water.

Because it is a poorly aerated soil as its particles are highly compacted.

**Question**

Complete the following statements :

1. .... is a good aerated soil, while .... has the slowest drainage of water.
2. When the aeration of soil increases, its draining of water ..... and its absorption of water .....
3. .... soil has the medium drainage of water, while .... soil is poorly aerated.

**Answers**

1. Sand soil - clay soil      2. increases - decreases.      3. Silt - clay

drain water

retention تصرف الماء

retain water احتجاز

يحتجز الماء



## Unit 3

## 5 The fertility of the soil

The fertility of any type of soil depends on the percentage of humus in it.

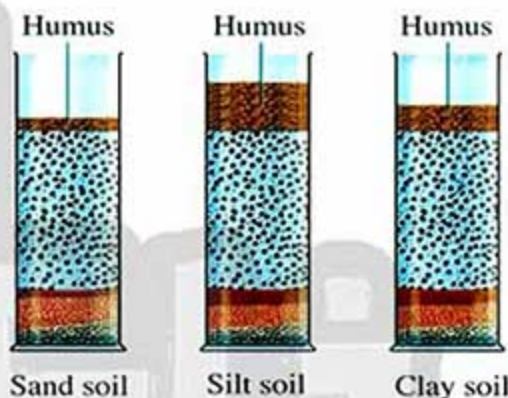
**Activity 5** To show the fertility of sand, silt and clay soils.

## Steps:

1. Put each type of soil in a graduated cylinder, then pour enough water in each cylinder.
2. Shake each cylinder strongly, then leave it to stand for 15 minutes.

## Observation:

Each cylinder contains different layers, where the first layer that represents humus is **large** in silt soil, **small** in sand soil and **medium** in clay soil.



## Conclusions :

- The silt soil is highly fertile as it is rich in humus, (it is the most suitable soil for cultivation).
- The clay soil is fertile as it has a medium amount of humus.
- The sand soil is less in fertility as it is poor in humus.

## G.R.

The silt soil is highly fertile.

Because it is rich in humus.

percentage  
represent

نسبة cultivation  
يشل enough

الزراعة suitable  
كافي

مناسب



## Soil and plants :

Each type of soil suits certain kinds of plants such as :

## Sand soil

It is suitable for the cultivation of :

1. Plants that produce tubers such as potatoes and sweet potatoes.
2. Plants which give fruits beneath (under) soil surface such as peanut plant.
3. Other plants such as cactus.



Potatoes



Sweet potatoes



Peanut



Cactus

## Silt soil

It is suitable for the cultivation of some plants such as strawberry, lemon, orange and pomegranates.



Orange



Strawberry



Lemon



Pomegranates

## Clay soil

It is suitable for the cultivation of some plants such as cotton, rice, sugar cane, wheat and some vegetables.



Cotton



Rice



Sugar cane



Wheat

Try to answer  
Test yourself

9 &amp; 10

tubers  
peanutدرنات  
القول السوداني wheatقصب السكر  
قمح cactusالبطاطا  
الصابر pomegranates

الرمان



# Remember

- Comparison between sand, silt and clay soils according to their properties :


Points of comparison	Sand soil	Silt soil	Clay soil
1. Main components :	Sand particles.	Mixture of gravel, sand, clay, silt and more humus.	Clay and silt particles.
2. Colour :	Yellow.	Grey.	Dark (black).
3. The size of particles :	Large.	Medium.	Small.
4. Compactness :	Weakly compacted (loose).	Moderately compacted.	Highly compacted (hard).
5. Aeration :	Good.	Medium.	Poor.
6. Drainage of water :	Fast and great.	Medium.	Slow.
7. Water absorption :	Low.	Medium.	High.
8. Fertility :	Less fertile.	Highly fertile.	Fertile.
9. Suitable plants :	Potatoes, sweet potatoes, peanut and cactus.	Strawberry, lemon, oranges and pomegranates.	Cotton, sugar cane, wheat and many vegetables.









## Questions

## on lesson two

Questions signed by  have been taken from the school book.



## 1. Choose the correct answer :

- ..... soil contains more humus.  
a. Sand                      b. Silt                      c. Clay                      d. Gravel
- Clay soil is .....  
a. composed of a small amount of sand and humus.  
b. composed mainly of clay and silt particles.  
c. composed of a large amount of humus.  
d. (a) and (b).
- The sand soil is characterized by .....  
a. yellow colour      b. black colour      c. grey colour      d. red colour
- The clay soil is ..... in colour.  
a. blue                      b. black                      c. grey                      d. yellow
-  The size of particles of clay soil is .....  
a. large.                      b. small.  
c. medium.                      d. double the size of silt soil particles.
- The grey colour is the colour of .....  
a. sand soil.                      b. clay soil.                      c. silt soil.                      d. humus.
-  The particles of silt soil are ..... in size.  
a. tiny                      b. medium                      c. large                      d. very large
-  The silt soil compactness is .....  
a. strong.                      b. weak.                      c. medium.                      d. very strong.
- Clay, silt and sand soils are different in compactness, where .....  
a. the compactness of clay soil is smaller than that of silt soil.  
b. the compactness of silt soil is larger than sand soil.  
c. the compactness of clay soil is larger than silt soil.  
d. (b) and (c) are correct.
-  The aeration of sand soil is .....  
a. good.                      b. bad.                      c. medium.                      d. poor.
- The good aeration is one of the ..... properties.  
a. clay soil                      b. sand soil                      c. silt soil                      d. silt and clay soils



## Unit 3

12. Clay soil .....  
 a. is very compacted. b. is loose.  
 c. is well aerated. d. drains more water.
13. The poorly aerated soil .....  
 a. has non-compacted particles. b. has highly compacted particles.  
 c. has high absorption of water. d. (b) and (c).
14. .... soil absorbs water very well.  
 a. Sand b. Silt c. Gravel d. Clay
15. The soil that has the fastest drainage of water and the lowest absorption of water is the .....  
 a. sand soil. b. clay soil. c. gravel soil. d. silt soil.
16. Clay soil retains more water than ..... soil(s).  
 a. silt b. sand  
 c. (a) and (b) d. no correct answer
17. The sand soil ..... water more than the other two types of soil.  
 a. drains b. retains c. holds d. no correct answer
18. The percentage of humus is very high in .....  
 a. sand soil. b. silt soil.  
 c. clay soil. d. sand and silt soils.
19. The most suitable soil for cultivation is the .....  
 a. sand soil. b. silt soil.  
 c. clay soil. d. gravel soil.
20. Silt soil is .....  
 a. very fertile soil. b. poorly fertile soil.  
 c. rich in gravel. d. poor in humus.
21. The soil that has good aeration also has .....  
 a. a great ability to drain water.  
 b. a great ability to absorb water.  
 c. a large amount of clay.  
 d. the smallest soil particles.
22. Sand soil is .....  
 a. highly fertile. b. fertile. c. less fertile. d. highly compacted.
23. The growth of ..... is preferred in sand soil.  
 a. peanut plant b. cotton c. vegetables d. wheat



24. All the following plants grow in the sand soil except .....
- a. cactus.                                  b. potatoes.  
c. sweet potatoes.                        d. rice.
25. Which of the following plants grows in the clay soil ? .....
- a. Cotton.              b. Strawberry.      c. Lemon.              d. Cactus.
26. Pomegranates and strawberry grow in .....
- a. sand soil.              b. silt soil.              c. clay soil.              d. clay and sand soils.
27. .... plants produce tubers and planted in sand soil.
- a. Potatoes                                  b. Sweet potatoes  
c. Cotton and rice                        d. (a) and (b)
28. .... plant gives fruits beneath the soil surface.
- a. Lemon                      b. Pomegranate      c. Peanut                      d. Strawberry

**2. Choose from column (B) what suits it in column (A) :**

(a)

(A)	(B)
1. Silt soil is	a. green in colour.
2. Clay soil is	b. yellow in colour.
3. Sand soil is	c. grey in colour.
	d. black in colour.


1. .... 2. .... 3. ....

(b) 

(A)	(B)
1. Silt soil	a. drains more water.
2. Clay soil	b. is rich in humus.
3. Sand soil	c. is highly compacted.
	d. is green in colour.






1. .... 2. .... 3. ....

**3.** Put (✓) in front of the right statement and (✗) in front of the wrong one, then correct it :


1.  The sandy particles are large in size and weak in compactness. ( )
2. Clay soil is composed of a mixture of gravel, sand, clay and silt but it contains more humus. ( )



## Unit 3

3. The colour of sand soil is black, while that of the clay soil is grey. ( )
4. The sand soil has the largest soil particles, while the clay soil has the smallest soil particles. ( )
5.  The spaces between the particles of clay soil are large. ( )
6.  Silt soil contains gravel, clay, sand, silt and humus. ( )
7.  Sand soil is more compacted than silt soil. ( )
8. The particles of clay soil are loose. ( )
9. The particles of silt soil are moderately compacted. ( )
10. The clay soil is well aerated, while the sand soil is moderately aerated. ( )
11. The highly compacted soil means that it is a poorly aerated one. ( )
12. Cactus grows in highly aerated soil. ( )
13. Sand soil has high drainage of water and high absorption of water. ( )
14. Silt soil drains water faster than clay soil. ( )
15. Clay soil is the most soil in retaining water. ( )
16. The clay soil has the slowest drainage of water, while the silt soil has the medium compactness. ( )
17. Peanut plant grows in less fertile soil, while rice grows in fertile soil. ( )
18. Cotton grows in clay soil, while strawberry grows in highly fertile soil. ( )
19. Wheat, potatoes and cactus grow in sand soil. ( )
20. Sweet potatoes grow in the soil that has high drainage of water, low absorption of water. ( )
21.  Cactus plant is seen in sand soil. ( )
22.  Wheat plant grows in sand soil. ( )

## 4. Write the scientific term of each of the following :

1. The soil whose colour is yellow. ( .....
2. The soil whose composed of a mixture of equal amounts of gravel, sand, clay and silt, but it contains more humus. ( .....
3. The black soil that is composed mainly of clay and silt particles. ( .....
4. The grey soil that contains more humus. ( .....
5. The soil whose particles are small in size and has a small amount of sand and humus. ( .....
6.  The most aerated soil. ( .....



## QUESTIONS LESSON 2

7. The soil that has weak compacted (loose) particles. (.....)
8. The soil that becomes very compact after drying. (.....)
9. The moderately compacted soil. (.....)
10. The soil that has medium drainage of water, medium absorption of water, grey colour and moderately compacted particles. (.....)
11. The poorly aerated soil. (.....)
12. The soil that is well aerated, its particles are non-compacted and has the fastest and greatest ability to drain water. (.....)
13. The soil that retains (hold) more water. (.....)
14. The soil that drains more water. (.....)
15. The soil that drains water slowly. (.....)
16. The soil that is highly fertile. (.....)
17. 📖 The soil that is rich in humus. (.....)
18. The soil that is poor in humus. (.....)
19. The most suitable soil for cultivation. (.....)
20. The fertile soil that has high absorption of water and high compactness. (.....)
21. The suitable soil for planting potatoes, sweet potatoes and cactus. (.....)
22. The plant that gives fruits beneath soil surface. (.....)
23. Plants produce tubers and grow in sand soil. (.....)
24. The suitable soil for cultivation of rice, cotton and wheat. (.....)
25. The suitable soil for cultivation of pomegranates, oranges, lemon and strawberry. (.....)
26. 📖 The highly fertile soil that contains suitable dissolved salts and humus. (.....)

## 5. Complete the following statements :

1. 📖 The main types of soil are ..... , ..... and .....
2. .... soil contains more humus, while .... soil contains rarely humus.
3. .... soil is composed of a mixture of equal amounts of gravel, sand, clay, silt and a large amount of humus.
4. Clay soil is composed mainly of ..... and ..... particles, while sand soil is composed mainly of ..... particles.



## Unit

## 3

5. The colour of ..... soil is dark (black), while that of ..... soil is yellow.
6. .... soil is grey in colour and the size of its particles is medium.
7. .... soil is moderately compacted, while ..... soil is weakly compacted.
8. .... soil has small-sized particles that are highly compacted.
9. The particles of ..... soil are large in size, while those of ..... soil are medium in size.
10. The size of particles of ..... soil is larger than that of silt soil, while the size of particles of the silt soil is larger than that of ..... soil.
11. The compactness in ..... soil is very weak, while that in ..... soil is very high.
12. .... soil is well aerated, while silt soil is ..... aerated.
13. The poorly aerated soil has ..... compacted particles.
14. .... soil is more compactable, while ..... has the fastest drainage of water.
15. .... soil has the fastest drainage of water, while ..... soil has the slowest drainage of water.
16. .... soil is highly fertile, because it contains a large amount of .....
17. The fertility of any soil depends on the percentage of .....
18. .... soil is less in fertility as it is poor in .....
19. Clay soil holds (retains) ..... water, while ..... soil keeps less water.
20. Silt soil aeration is ....., clay soil compactness is ..... and the silt soil fertility is .....
21. .... soil has a great ability to absorb water, while ..... soil has the smallest ability to absorb water.
22. .... soil is suitable for the cultivation of tuber plants as .....
23. The plants that give fruits beneath soil surface grow in ..... soil.
24. Cactus grows in ..... soil, while cotton grows in ..... soil.
25. .... soil is suitable for the cultivation of most plants.
26. .... soil is suitable for the cultivation of oranges and lemon, while ..... soil is suitable for the cultivation of potatoes.



27. .... soil is suitable for growing peanut, while .... soil is suitable for the cultivation of strawberry.
28. Pomegranates plant is planted in .... soil, while .... plant is planted in clay soil.
29. 📖 Rice grows efficiently in .... soil.
30. Strawberry and .... grow well in .... soil but .... and rice grow well in clay soil.

### 6. Give reasons for the following :

1. Sand soil is named by this name.  
.....
2. 📖 Soils differ in compactness according to their types.  
.....  
.....
3. 📖 The water level in the clay soil is higher than the water level in both sand and silt soils.  
.....
4. 📖 The good aeration of the sand soil.  
.....
5. The clay soil retains the biggest amount of water.  
.....
6. The silt soil is moderately aerated.  
.....
7. 📖 The clay soil is poorly aerated.  
.....
8. The clay soil has the slowest drainage of water.  
.....
9. The sand soil is well aerated and has a high ability to drain water.  
.....
10. The silt soil has the medium drainage of water.  
.....
11. The sand soil has the fastest and greatest drainage of water.  
.....



12. The silt soil has the highest fertility.

13. The silt soil is the most suitable soil for cultivation.

14. The clay soil is fertile.

15. The sand soil is less fertile.

16. Potatoes and sweet potatoes grow in sand soil.

17. Peanut plant grows in sand soil.

### 7. Cross the odd word or statement out :

- Sand soil – poorly aerated – highly drainage of water – suitable for growing peanut. (.....)
- Clay soil – black – poor in humus – retains more water – suitable for growing wheat. (.....)
- Silt soil – moderately aerated – dark in colour – suitable for growing strawberry. (.....)
- Sand soil – very rich in humus – medium drainage of water – medium absorption of water. (.....)
- Silt soil – high water drainage – yellow in colour – cactus. (.....)
- Potatoes – sweet potatoes – rice – peanut. (.....)
- Cotton – lemon – sugar cane – wheat. (.....)
- Rice – potatoes – cotton – wheat. (.....)
- Strawberry – lemon – oranges – wheat. (.....)
- Pomegranates – potatoes – peanut – cactus. (.....)

### 8. Mention three examples of plants that grow in the clay, silt and sand soils.



### 9. Compare between : Sand, clay and silt soils.

.....

.....


.....

.....

.....

.....


### 10. Show by an activity that :

1.  Soil drainage of water differs according to their types.

.....

.....

.....

2.  The comparison between water absorption and aeration in different types of soil.

.....

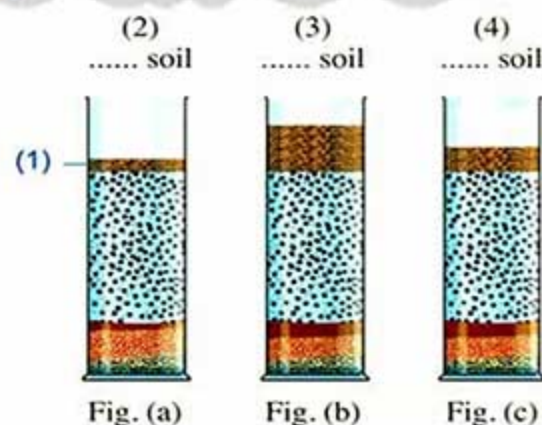
.....

.....

### 11. Look at the opposite figures, then answer :

1. Complete the following labels.

- ① .....
- ② .....
- ③ .....
- ④ .....





## Unit 3

2. Which of the previous figures is rich in humus ?

.....

3. What do you conclude from the previous figures ?

.....

.....

.....

### 12. What is meant by ... ?

1. Sand soil.

.....

2. Clay soil.

.....

3. Silt soil.

.....

4. The fertility of soil.

.....

### 13. Arrange the different types of soils :

1. Ascendingly according to the size of particles.

.....

2. Descendingly according to the drainage of water.

.....

3. Descendingly according to the compactness.

.....

4. Ascendingly according to water absorption.

.....

5. Ascendingly according to aeration.

.....

6. Descendingly according to fertility.

.....



**14.** Classify the following crops according to the type of soil, where they grow :



Cotton



Potatoes



Sugar cane



Orange



Cactus



Lemon

**15.** Look at the opposite figures, then answer :

- What do you see in the opposite figures ?  
.....
- Which soil is the best for cultivating plants ?  
.....
- Which soil has the most absorption of water ?  
.....
- Which soil is the most fertile ?  
.....



Fig. (a)



Fig. (b)



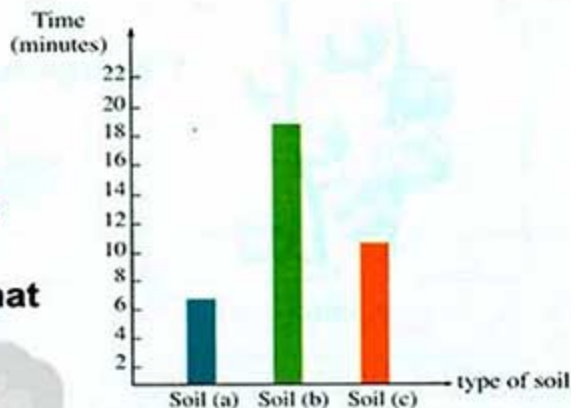
Fig. (c)





## Timss Questions

1. In an activity that shows the drainage of water in different types of soil, Shady adds equal amount of water to each type of soil and observes the following results then he draws a diagram for his results as follows.



From these results, Shady conclude that (choose the right statement) :

1. Soil (a) is sand soil, soil (b) is silt soil and soil (c) is clay soil.
2. Soil (a) is clay soil, soil (b) is silt soil and soil (c) is sand soil.
3. Soil (a) is sand soil, soil (b) is clay soil and soil (c) is silt soil.
4. Soil (a) is silt soil, soil (b) is sand soil and soil (c) is clay soil.

2. The following table shows some properties of three different samples of soils :

Sample (A)	Sample (B)	Sample (C)
- It mainly consists of sand particles.	- It mainly consists of clay and silt particles.	- It mainly consists of a mixture of gravel, sand, clay, silt and more humus.
- It has yellow colour.	- It has dark colour.	- It has grey colour.
- It is less fertile.	- It is fertile.	- It is highly fertile.

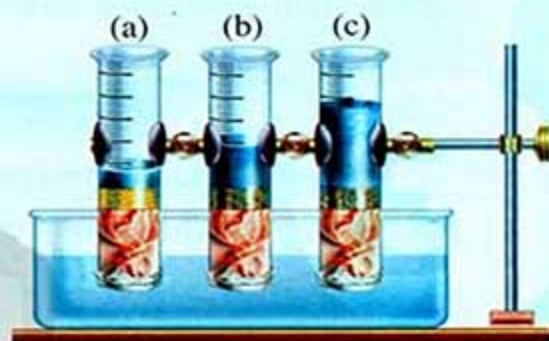
After reading the properties of each sample, choose the right statement :

1. Sample (A) is sand soil, sample (B) is silt soil and sample (C) is clay soil.
2. Sample (A) is clay soil, sample (B) is sand soil and sample (C) is silt soil.
3. Sample (A) is silt soil, sample (B) is clay soil and sample (C) is sand soil.
4. Sample (A) is sand soil, sample (B) is clay soil and sample (C) is silt soil.



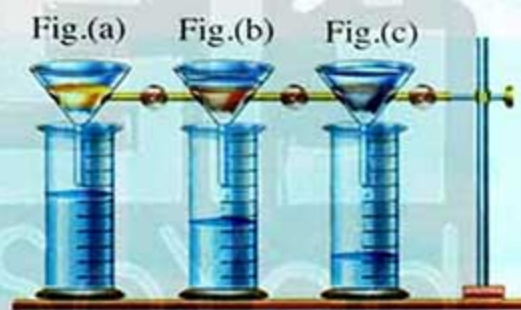
**3. Look at the opposite figure, then answer the following :**

1. Which tube contains clay soil ?  
.....
2. Which tube is highly aerated soil ?  
.....
3. Which tube is moderately aerated soil ?  
.....
4. What do you conclude from this activity ?  
.....  
.....



**4. Look at the opposite figures, then answer the following :**

1. Mention the type of the soil in each funnel.  
.....
2. Which soil retains more water ?  
.....
3. What do you conclude from these figures ?  
.....  
.....





PART

1

# Worksheets





## Unit one

## Lesson 1

Total mark  
25

## Worksheet 1

Answer each of the following questions :

## 1. Complete the following statements :

(5 marks)

1. The friction force between air and the object that moves through it is called .....
2. By increasing the ..... and ..... of the body, the air resistance increases.
3. .... and ..... are the factors that affect friction force.
4. Parachutist opens the parachute during landing to increase its ..... that increases .....
5. Rockets and ..... are designed in streamline shapes to .....

## 2. (A) Give reasons for :

(5 marks)

1. Birds stretch their wings on landing.  
.....  
.....

2. The cars and aircrafts are designed with streamline shapes.  
.....  
.....

## (B) What are the factors affecting the air resistance ?

.....  
.....

## 3. Rewrite the following statements after correcting the underlined words :

(5 marks)

1. Friction force depends on the colour of the two touching objects.  
( ..... )
2. As the exposed surface area of the object increases, the resistance of air decreases.  
( ..... )
3. Trains and aircrafts are designed in streamline shapes to increase the air resistance.  
( ..... )



## Worksheets

4. **Water resistance** is the friction force that results from the movement of objects through air. ( ..... )
5. When the velocity of a train **decreases** , the air resistance increases. ( ..... )

## 4. (A) What happens if ... ?

(5 marks)

1. You increase the surface area of the moving object.
- .....

2. You stop pedalling during the movement of the bike.
- .....

3. A rubber ball moves on a smooth surface.
- .....

## (B) What is meant by ... ?

1. Friction force.
- .....

2. Air resistance.
- .....

## 5. Choose from column (B) what suits it in column (A) :

(5 marks)

(A)	(B)
1. The moving car is affected by the air resistance that acts	a. is a direct relation.
2. Friction between rough surfaces	b. increase their surface area.
3. By increasing the speed of a train,	c. is more than that between smooth surfaces.
4. Birds stretch their wings on landing to	d. in the opposite direction of its movement.
5. The relation between the surface area of the moving body and the air resistance	e. the air resistance increases.

1. ....

2. ....

3. ....

4. ....

5. ....



## Unit one

## Lesson 1

Total mark  
25

## Worksheet 2

Answer each of the following questions :

1. (A) Mention two methods to decrease the water resistance.

(5 marks)

(B) Write the scientific term :

1. A force that is opposite to the movement of a boat in a river. ( ..... )
2. It is a type of friction force resulting from the movement of an object through air. ( ..... )
3. A force that opposes the motion of fish in the sea. ( ..... )

2. Complete the following statements by using the words between brackets :

(5 marks)

( Air resistance - Streamline - Friction - Water resistance - Opposite direction - Increase - Decreases )

1. .... is the friction force that results from the movement of objects through water.
2. The movement of the ship is in the ..... of the water resistance.
3. Fish have ..... shapes to decrease the water resistance.
4. By decreasing the speed of dolphin in water, the water resistance .....
5. .... is one of the types of friction force.

3. (A) Give reasons for :

(5 marks)

1. When the speed of a swimmer decreases, water resistance decreases.  
.....
2. Air and water resistances slow down the movement of a body.  
.....
3. Dolphin has a streamline shape.  
.....

(B) What is meant by the water resistance ?



## Worksheets

## 4. Choose the correct answer :

(5 marks)

- There is ..... relation between the water resistance and the surface area of the moving body.  
a. a curved      b. a direct      c. an indirect      d. no
- ..... is a type of friction force as a body moves through water.  
a. Air resistance      b. Water resistance  
c. Electrical resistance      d. Magnetic resistance
- Sliding a body down over another body means that .....  
a. friction force between the two bodies is larger than the movement force.  
b. friction force between the two bodies is smaller than the movement force.  
c. movement force between the two bodies is smaller than the friction force.  
d. friction force is equal to movement force.
- The friction force between rough surfaces is ..... that between smooth surfaces.  
a. larger than      b. less than      c. zero      d. similar
- ..... is (are) from the factors affecting water resistance.  
a. The speed of the body through water  
b. The surface area of the body that moves through water  
c. Lighting of a match  
d. (a) and (b)

## 5. (A) The following graph indicates the relation between the surface area of the moving body and the water resistance.

(5 marks)

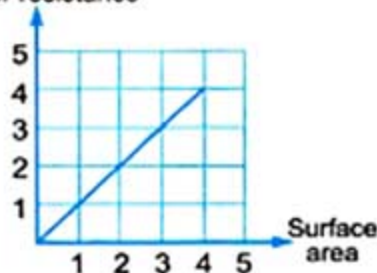
1. What is the type of this relation ?

.....

## 2. Complete :

The increasing in the surface area of the moving body through water causes the increase .....

Water resistance



## (B) What happens when ... ?

- The surface area of the ship that moves through water decreases.  
.....
- A swimmer swims with a very high velocity.  
.....



## Unit one

## Lesson 2

Total mark  
25

## Worksheet 3

Answer each of the following questions :

## 1. Complete the following statements :

(5 marks)

1. Objects will slide down through our hands if there is no ..... force.
2. .... is necessary to control the car speed and to change its .....
3. .... and .... are from activities that needs friction force.

## 2. (A) Give reasons for :

(5 marks)

1. Mechanical machines must be cooled, when they are operated for a long time.

2. Friction force causes a great economical loss.

## (B) Rewrite the following statements after correcting the underlined words :

1. Friction decreases the temperature between the moving parts of machines. ( )
2. Car breaks depend on light in slowing down and stopping cars. ( )

## 3. (A) What happens if ... ?

(5 marks)

1. Absence of friction between car tires and the road.
2. The temperature of the internal moving parts of machines increases.

## (B) Put (✓) or (x) :

1. Friction force increases the temperature of the internal moving parts of machines. ( )



2. Lighting a match needs friction force. ( )
3. Damage of machines is from the advantages of friction. ( )
4. Controlling the car speed and changing its direction is one of the advantages of friction force. ( )

**4. (A) Write the scientific term :**

(5 marks)

1. A force that helps us to walk and run. ( ..... )
2. They depend on friction force to slow down or stop a car. ( ..... )

**(B) Write three advantages of friction force in our life.**

**5. Choose the correct answer :**

*(5 marks)*

1. Friction between the internal moving parts of a machine causes .....
  - a. the erosion of the machine parts.
  - b. the damage of the machine parts.
  - c. the increase in their temperature.
  - d. all the previous answers.
2. The friction between your shoes and the ground prevents .....
  - a. walking.
  - b. running.
  - c. slipping down.
  - d. writing.
3. All the following are advantages of friction force except .....
  - a. it helps in moving and stopping cars.
  - b. it is necessary for lighting a match.
  - c. it enables us to walk.
  - d. it causes increasing of temperature of internal moving parts of machines.
4. Car brakes that are used to stop cars depend on .....
  - a. air resistance.
  - b. water resistance.
  - c. friction force.
  - d. (a) , (b) and (c).
5. Lighting up a match needs friction force to generate .....
  - a. lighting.
  - b. sound.
  - c. electricity.
  - d. attraction.



## General Exercise of the School Book on

Answer each of the following questions :

1. Complete the following sentences :

1. The value of ..... between two surfaces depends on the type of material of both surfaces.
2. Friction force has its effect in the opposite direction of .....
3. The friction force between air and the object that moves through is called .....
4. The friction force between water and the object that moves through is called .....
5. .... increases by increasing the surface area of a moving object.
6. The force of ..... acts in the opposite direction of an object's motion.

2. Answer the following question :

The following table clarifies the values of friction force between some surfaces. Study this table and answer the following questions :

The two surfaces	The friction force
Glass and glass.	3
Rubber and wet cement.	4
Glass and metal.	5
Rubber and dry cement	6

If you push a marble on a glass surface and another similar one on a metal surface, which one will move for a longer distance ? Why ?

.....

.....

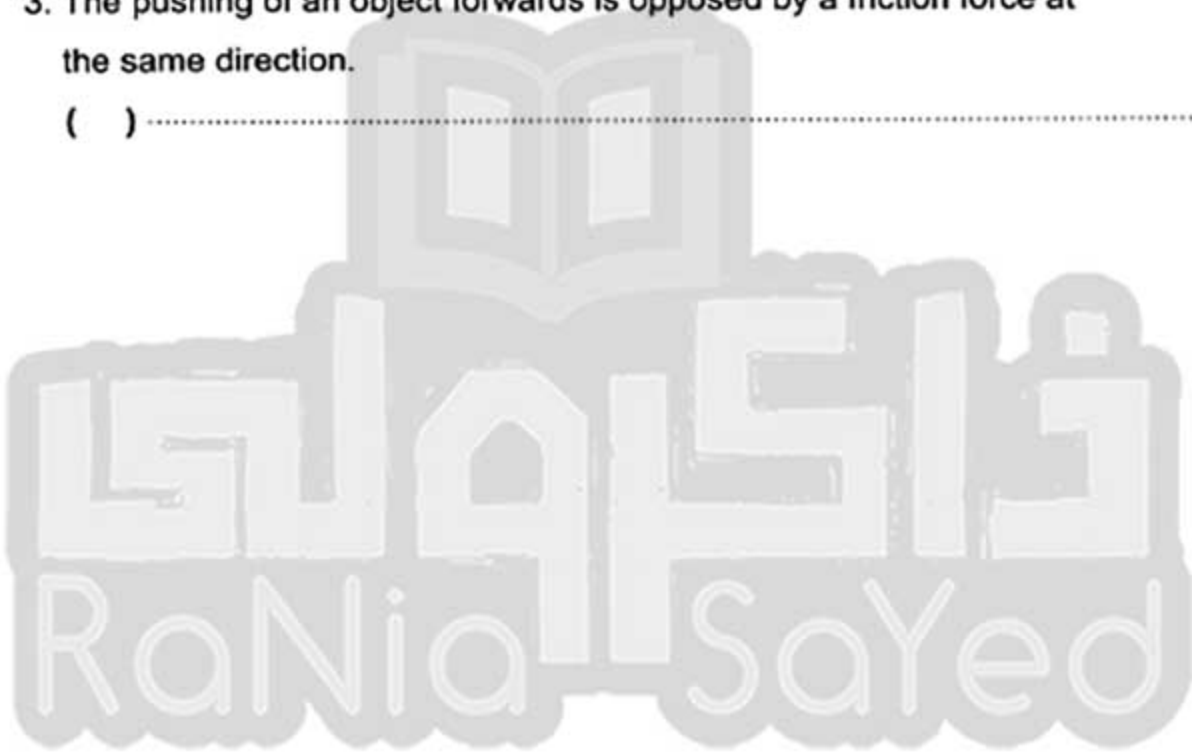
.....

.....



**3. Put (✓) or (x) in front of each of the following sentences and correct the wrong sentence :**

1. The friction force affects in an opposite direction to the direction of motion.  
( ) .....
2. The friction force depends on the shape of the surface of two touching objects.  
( ) .....
3. The pushing of an object forwards is opposed by a friction force at the same direction.  
( ) .....





## Model Exam

1

## on Unit one

Total mark

25

Answer each of the following questions :

## 1. Write the scientific term :

(5 marks)

1. A force opposes the motion of a boat in the river. (.....)
2. A force enables us to control the car speed and change its direction. (.....)
3. A force produced when a ball touches the floor. (.....)
4. A type of force that decreases due to the streamlined shape of objects. (.....)
5. A force resulting from the movement of objects through air. (.....)

## 2. Complete the following statements :

(5 marks)

1. .... exists between two surfaces when they touch each other and it acts in the ..... direction of the movement.
2. .... and .... are the factors that affect the air resistance.
3. Fish have streamline shapes to ..... , while birds have streamline shapes to .....
4. There is a ..... relation between the surface area of the moving bird and air resistance.
5. The friction between your shoes and ..... helps in walking and prevents .....
6. .... is one of the advantages of friction.

## 3. (A) Give reasons for :

(5 marks)

1. A fish has a streamline shape.  
.....
2. Rising in the temperature of the internal moving parts of machines.  
.....
3. Air resistance and water resistance slow down the movement of the body.  
.....



## Worksheets

(B) What happens if we drop two similar plastic sacs, one of them is folded and the other is unfolded.

Which one reaches the ground first ? Give reason.

.....  
 .....

4. (A) Choose the correct answer :

(5 marks)

- When the speed of the moving object increases, the friction force .....  
 a. increases. b. decreases.  
 c. doesn't change. d. (a) , (b) and (c).
- Friction force depends on .....  
 a. the type of the material surface only.  
 b. the surface area of the moving object.  
 c. the speed of the moving object.  
 d. (a) , (b) and (c).
- ..... is the friction force resulting from the movement of any object through water.  
 a. Air resistance b. Magnetic force  
 c. Water resistance d. Kinetic force

(B) What is meant by ... ?

Water resistance :

.....  
 .....

5. Put (✓) or (x), then correct the wrong one :

(5 marks)

- During riding a bicycle, there is a magnetic force between the bicycle tires and the road.  
 ( ) .....
- The friction force between rough surfaces is larger than that between smooth surfaces.  
 ( ) .....
- Rockets and aeroplanes have streamline shapes to decrease air resistance.  
 ( ) .....
- The friction force increases by decreasing the speed of the body.  
 ( ) .....
- The friction between your shoes and ground helps in walking.  
 ( ) .....



## Model Exam

2

## on Unit one

Answer each of the following questions :

## 1. Choose the correct answer :

(5 marks)

- Friction force acts in the ..... direction of the movement.
  - vertical
  - same
  - opposite
  - no correct answer
- The streamline shape of a rocket .....
  - increases the air resistance.
  - decreases the speed of the rocket.
  - helps the rocket to move backward.
  - decreases the air resistance.
- There is ..... between the bicycle tires and the road.
  - pushing force
  - movement force
  - friction force
  - stopping force
- ..... is used to light up a match.
  - Light energy
  - Sound energy
  - Electrical energy
  - Friction force
- When you rub your hands together, ..... arises between them.
  - the friction force
  - the movement force
  - the pushing force
  - no correct answer

## 2. Give reasons for :

(5 marks)

- Damage of the internal moving parts of machines.  
.....
- There is a direct relation between air resistance and surface area.  
.....
- Birds stretch their wings on landing.  
.....
- Friction force depends on the type of the material surface.  
.....
- Modern cars have streamline shapes.  
.....



## Worksheets

## 3. (A) Complete the following statements :

(5 marks)

1. By decreasing the friction force, the distance moved by the object .....
2. .... resistance and .... resistance are types of friction force.
3. .... enables us to walk on ground.
4. The value of .... between two surfaces depends on the type of material of both surfaces.
5. Fish have streamline shape to .....

## (B) What is meant by ... ?

Air resistance :

.....

.....

## 4. (A) Write the scientific term :

(5 marks)

1. The force that slows down the moving object and its effect is in the opposite direction of the object movement. ( .....
2. The relation between the surface area of a moving body and air resistance. ( .....
3. It is the friction force resulting from the movement of any object through water. ( .....

## (B) Correct the underlined words :

1. The friction force acts in the same direction of the movement. ( .....
2. When a parachutist opens his parachute, air resistance decreases. ( .....

## 5. (A) Put (✓) or (x) :

(5 marks)

1. Friction force decreases between rough surfaces. ( )
2. Damage of machines is from the disadvantages of friction. ( )
3. The friction force is always in the same direction of the movement of the object. ( )

## (B) Mention the advantages of friction (2 points only).

.....

.....



## Unit Two

## Lesson 1

Total mark  
25

## Worksheet 4

Answer each of the following questions :

## 1. Complete the following statements :

(5 marks)

1. The heart is composed of ..... sides and ..... chambers.
2. The circulatory system consists of ..... and .....
3. The upper chambers of the heart are called ..... and the lower chambers are called .....
4. The blood flows inside a network of pipelines called .....
5. .... are large and wide at the beginning then they become smaller, while ..... begin small at the cells and become larger till reaching the heart.

## 2. (A) Give reasons for :

(5 marks)

1. The circulatory system is very important.  
.....  
.....  
.....
2. The presence of a valve between each atrium and ventricle.  
.....  
.....
3. Blood capillaries have thin walls.  
.....  
.....

## (B) What is meant by ... ?

1. Blood vessels.  
.....
2. The heart.  
.....



## Worksheets

## 3. (A) Write the scientific term :

(5 marks)

1. The chambers of heart that receive blood from veins. ( ..... )
2. The artery that carries the blood to all the body cells. ( ..... )
3. The structure that prevents the returning back of blood from ventricles to atria. ( ..... )

## (B) Correct the underlined words :

1. The circulatory system consists of heart, blood and two lungs. ( ..... )
2. The atria pump blood out of the heart. ( ..... )

## 4. (A) What happens when ... ?

(5 marks)

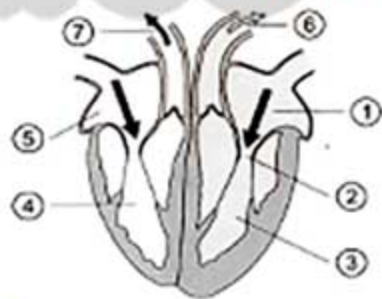
1. There is no wall between the two sides of the heart.  
.....
2. Blood capillaries have thick walls.  
.....
3. There is no valve between atrium and ventricle.  
.....

## (B) Compare between arteries and veins (according to : function - thickness).

## 5. (A) Label the opposite figure ... ?

(5 marks)

- |                 |         |
|-----------------|---------|
| ① .....         | ② ..... |
| ③ .....         | ④ ..... |
| ⑤ .....         | ⑥ ..... |
| ⑦ ..... artery. |         |



## (B) Mention the function, size and the location of the heart.

- Function : .....
- Size : .....
- Location : .....



## Unit Two

## Lesson 1

Total mark

25

## Worksheet

5

Answer each of the following questions :

## 1. (A) Complete the following statements :

(5 marks)

- The number of heartbeats is ..... per minute.
- ..... ventricle pushes blood to the two lungs through .....
- ..... are red cells without nuclei, while ..... are white cells with different forms of nuclei.

## (B) What happens if ... ?

- Microbes attack the body.

- Blood platelets are absent from the blood.

## 2. (A) Choose the correct answer :

(5 marks)

- You should ..... to maintain your circulatory system healthy.
  - keep exercising
  - expose to accidents
  - increase fats in food
  - not eat vegetables
- The function of blood are .....
  - the defence of the body.
  - keeping the temperature of the body constant.
  - the delivery of materials.
  - (a) , (b) and (c).
- All the following are from the components of the blood except .....
  - plasma.
  - white blood cells.
  - blood platelets.
  - blood capillaries.

## (B) Give reasons for :

- The red blood cells have great importance.

- Smoking must be avoided.



## Worksheets

## 3. Write the scientific term :

(5 marks)

- The blood component that carries the digested food and wastes. (.....)
- The blood cells that have no nuclei. (.....)
- Small cell fragments that play a role in blood coagulation and healing wounds. (.....)
- A structure inside the heart that allows the blood to flow in one direction only. (.....)
- The chamber of the heart that pushes the blood to the lungs. (.....)

## 4. (A) Correct the underlined words :

(5 marks)

- The left ventricle pumps the blood to the two lungs. (.....)
- The blood components that carry gases are called blood platelets. (.....)

(B) Compare between red blood cells and white blood cells according to their functions.

.....

.....

.....

## 5. (A) Choose from column (B) what suits in column (A) :

(5 marks)

(A)	(B)
1. Venae cavae	a. carry the blood from all body parts to the right atrium.
2. Aorta	b. carries the blood to the two lungs.
3. Pulmonary artery	c. carries the blood to all the body cells.
4. Pulmonary veins	d. carry the blood to the left atrium.
5. Blood platelets	e. help in formation of blood clots.

- .....
- .....
- .....
- .....
- .....

(B) How to maintain your circulatory system healthy ? (4 points only)

.....

.....

.....



## Unit Two

## Lesson 2

Total mark  
25

## Worksheet 6

Answer each of the following questions :

## 1. Complete the following statements :

(5 marks)

1. The useless materials are called ..... , while ..... are the indigested food.
2. The urinary system is located inside the ..... cavity.
3. Getting rid of excess salts occurs through ..... and .....
4. The kidney is a ..... shaped organ.
5. Sweat glands get rid of some ..... and ..... in form of .....
6. The function of the kidneys is affected when you keep ..... in it for a long time.

## 2. (A) Give reasons for :

(5 marks)

1. The human must get rid of the excretory wastes.  
.....
2. The urinary system contains a urinary bladder.  
.....
3. Man urinates less in summer than in winter.  
.....

## (B) Correct the underlined words in each of the following :

1. Nitrogenous wastes are removed through skin. ( ..... )
2. The large intestine is the main organ in the urinary system. ( ..... )
3. Ureter is a tube that extends from the bladder to open outside the body. ( ..... )
4. The urinary bladder stores sweat temporarily. ( ..... )

## 3. Write the scientific term :

(5 marks)

1. A salty liquid produced by skin in hot weather. ( ..... )
2. The system that clarifies blood from excess salts, urea and uric acid. ( ..... )
3. A tiny canal extends from each kidney to the urinary bladder. ( ..... )
4. The storing organ of urine. ( ..... )
5. The glands found in the skin and get rid of excess salts and water through skin. ( ..... )



## Worksheets

## 4. (A) What happens if ... ?

(5 marks)

1. The excretory wastes can't be removed from the body.

.....  
 .....

2. The urinary bladder is removed.

.....  
 .....

(B) Choose from column (B) what suits in column (A) :

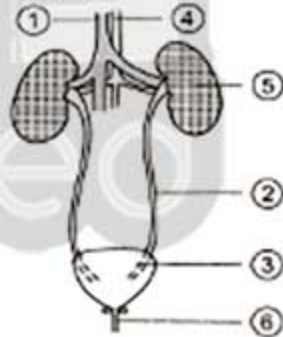
(A)	(B)
1. Cell wastes	a. are located at both sides of backbone.
2. Two ureters	b. carbon dioxide, urea, uric acid and some excess salts.
3. Two kidneys	c. connect between the kidney and the bladder.
4. Urethra	d. extends from the bladder and opens outside the body.

1. .... 2. .... 3. .... 4. ....

## 5. (A) Label the opposite figure ... ?

(5 marks)

- ① .....  
 ② .....  
 ③ .....  
 ④ .....  
 ⑤ .....  
 ⑥ .....



(B) What is meant by ... ?

1. Nitrogenous wastes.

.....  
 .....

2. The urinary system.

.....  
 .....



## General Exercise of the School Book on

Answer each of the following questions :

**1. Complete the following sentences by using the following words :**

( plasma - valve - veins - left ventricle - clot - pulmonary artery - blood platelets - urea - Urinary bladder - urethra - uric acid ).

1. Vessels that carry blood to the heart are called .....
2. There is a ..... between atrium and ventricle on each side of the heart.
3. The tube, which extends from the urinary bladder and opens outside the body is called .....
4. Blood consists of red blood cells, white blood cells, ..... and .....
5. Urine consists of water containing excess salt, ..... and .....
6. When the blood is exposed to the air, a blood ..... is formed.

**2. Put (✓) or (x) in front of each of the following sentences and correct the wrong sentences :**

1. There are valves within the heart cavity.  
( ) .....
2. The aorta delivers blood to the lungs.  
( ) .....
3. White blood cells defend the body against microbes.  
( ) .....
4. Eating meals rich in fats and salts activates the circulatory system.  
( ) .....
5. Keeping the urine and delaying getting rid of it benefits urinary bladder.  
( ) .....
6. The kidney filters excess water and salts from the human's food.  
( ) .....
7. Ureter is a tube that extends from the urinary bladder to open outside of the body.  
( ) .....



### 3. Choose the correct answer :

- The heart is a muscular pump in a size of your .....  
a. fingers.                      b. foot.                      c. fist.
- Blood vessels which carry blood from the heart are the .....  
a. arteries.                      b. veins.                      c. blood capillaries.
- Blood components which are responsible for attacking the microbes causing diseases to man are the .....  
a. red blood cells.                      b. white blood cells.                      c. blood platelets.
- Carbon dioxide and water vapour are released by the .....  
a. kidneys.                      b. lungs.                      c. heart.
- Urea is expelled by the .....  
a. heart.                      b. kidneys.                      c. lungs.

**4. The figure you see illustrates the human blood composition.**

**Answer the following questions :**

1. Write the names of the numbered parts.



- ① .....
- ② .....
- ③ .....
- ④ .....

2. What is the function of the 2 components no. ① and ② ?

```
=====
```

```
-----
```

```
=====
```

- 3. Which component carries water and food materials ?**

.....



## Model Exam

1

## on Unit Two

Total mark

25

Answer each of the following questions :

1. Complete the following statements :

(5 marks)

1. The upper chambers of the heart are called ..... , while the lower chambers are called .....
2. The healthy balanced food must be low in ..... and .....
3. .... is connected to the kidney and transfers ..... to the urinary bladder.
4. The yellow watery component of the blood is called .....
5. The body gets rid of excess salts and water through ..... and .....
6. A kidney is a ..... shaped organ.

2. Correct the underlined words :

(5 marks)

1. The aorta delivers the blood to the lungs. ( ..... )
2. Ureter is a tube that extends from the urinary bladder to open outside of the body. ( ..... )
3. The urinary bladder stores sweat temporarily. ( ..... )
4. Red blood cells defend the body against microbes. ( ..... )
5. The kidney excretes some excess water and salts from the human blood. ( ..... )

3. (A) State the function of each of the following :

(5 marks)

1. The kidney.

.....  
 .....

2. The valve between each atrium and ventricle.

.....  
 .....



## Worksheets

(B) Choose the odd word out, then write the scientific term of the other words :

1. Kidney - Ureter - Urethra - Right atrium - Urinary bladder.

- The odd word : .....

- The scientific term : .....

2. Red blood cells - Urinary bladder - White blood cells - Blood platelets - Plasma.

- The odd word : .....

- The scientific term : .....

4. (A) Give reasons for :

(5 marks)

1. We should not eat a big quantity of fats.

.....

2. The blood platelets are very necessary.

.....

3. Sweat has salty taste.

.....

(B) How can you maintain the circulatory system healthy ? (2 points only)

.....

.....

5. Choose the correct answer :

(5 marks)

1. The heart consists of .....

a. two sides and four chambers.

b. two sides and two chambers.

c. four sides and two chambers.

d. four sides and four chambers.

2. Each kidney contains about ..... minute tubules that filter blood from wastes.

a. 1 million

b. 2 millions

c. 1 thousand

d. 2 thousands

3. Arteries carry blood .....

a. to the heart.

b. away from the heart.

c. towards and away from the heart.

d. no correct answer.

4. .... are the materials that the body must get rid of them.

a. Poisonous excretory materials

b. Harmless excretory materials

c. Fats

d. Proteins

5. The kidney has a (an) ..... shape.

a. bean

b. pea

c. banana

d. orange



## Model Exam

## 2

## on Unit Two

Answer each of the following questions :

## 1. Write the scientific term :

(5 marks)

1. The balloon like sac organ that stores urine temporarily. (.....)
2. The ends of arteries and the beginnings of veins. (.....)
3. Tiny blood vessels allow blood to deliver food and oxygen to the cells. (.....)
4. A narrow tube that connects the kidney to the urinary bladder. (.....)
5. A muscular organ, equals about your fist size and located within the chest. (.....)

## 2. (A) Choose the correct answer :

(5 marks)

1. A chamber in the heart which receives blood from all the body organs is called .....  
a. right atrium.      b. left atrium.      c. right ventricle.      d. left ventricle.
2. Red blood cells carry .....  
a. oxygen.      b. water.      c. salts.      d. sugar.
3. Bloody urine means the presence of ..... in urine.  
a. sweet      b. blood  
c. carbon dioxide      d. fats

## (B) Give reasons for :

1. You must not keep urine for a long time.  
.....
2. White blood cells have an important role in keeping your body healthy.  
.....

## 3. (A) Complete the following statements :

(5 marks)

1. The ..... is the source of the pulses in your wrist.



## Worksheets

- ..... defend the body against microbes.
- Blood flows from the atrium to ..... through the .....

**(B) What is the function of ... ?**

- Arteries : .....
- Ureters : .....
- Blood platelets : .....

**4. Correct the underlined words :****(5 marks)**

- The kidneys are located in chest cavity. ( )
- Urine is stored in the ureter until it is released. ( )
- The wall of blood capillaries is very thick. ( )
- The blood comes out from the kidney through an artery. ( )
- The heart is located within the abdominal cavity. ( )

**5. (A) What happens when ... ?****(5 marks)**

- The plasma is absent from the blood.

- The two kidneys are damaged.

**(B) Put (✓) or (x) :**

- Nitrogenous wastes are expelled out by the two lungs. ( )
- White blood cells defend the body against microbes. ( )

**(C) How can you maintain the urinary system healthy ? (2 points only)**



## Unit Three

## Lesson 1

**Total mark**

25

## Worksheet 7

**Answer each of the following questions :**

**1. Complete the following statements :**

*(5 marks)*

1. .... is a thin loose superficial layer which covers the Earth's crust.
2. From the components of the soil are ..... and .....
3. The breaking down of rocks produces ..... gravel and .....
4. .... affects the colour of soil.
5. .... is the main component of the environment.
6. Decay of dead organisms produces .....

**2. (A) Write the scientific term :**

(5 marks)

1. It is the decayed remains of animals and plants mixed with the soil components and its colour is dark brown or black. ( ..... )
2. A thin loose upper layer which covers the Earth's crust. ( ..... )
3. A dark brown material that affects the colour of the soil. ( ..... )

**(B) Give reasons for :**

2. The soil is the main component of the environment.

**3. Choose the correct answer :**

**(5 marks)**

1. The soil is important for .....
  - a. animals.
  - b. plants.
  - c. humans.
  - d. all the previous answers.
2. Which of the following is one of the soil components that adds nutrients to soil ? .....
  - a. Sand.
  - b. Pieces of rocks.
  - c. Water.
  - d. Humus.
3. Soil is important for animals as .....
  - a. it provides them with water.
  - b. it represents the home for some of them.
  - c. it provides them with plants (food).
  - d. (b) and (c).



4. In the opposite figure, symbol Ⓐ represents .....
- a. gravel.
- b. humus.
- c. water.
- d. mud.
5. All the following are considered from the components of soil except .....
- a. pieces of rocks.
- b. water.
- c. silt.
- d. potatoes.



#### 4. (A) What happens when ... ?

*(5 marks)*

1. There are no roots in soil.

=====

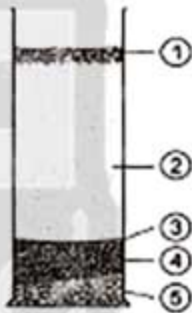
2. There is no soil.

.....

**(B) Look at the opposite figure that represents an experiment to show the soil components.**

**Write the labels on the figure :**

- ① ..... ② .....  
③ ..... ④ .....  
⑤ .....



**5.** Put (✓) or (✗) , then correct the wrong ones :

*(5 marks)*

1. The texture of soil helps scientists to identify the minerals inside it. ( )
2. Animals affect the soil composition. ( )
3. The colour of humus is blue. ( )
4. Soil is composed mainly of sand and humus only. ( )
5. When you shake a mixture of soil and water, then leave it for a while, the first layer is silt and the last one is gravel. ( )



## Unit Three

## Lesson 1

Total mark  
25

## Worksheet 8

Answer each of the following questions :

## 1. Choose the correct answer :

(5 marks)

- Which of the following factors breaks down rocks causing soil erosion ? .....
  - Running water.
  - Change of temperature.
  - Winds.
  - All the previous answers.
- The soil colour changes usually between black and dark brown due to the presence of .....
  - sand.
  - humus.
  - rocks.
  - spiders.
- The layers of the soil are .....
  - top soil layers only.
  - lower soil layers only.
  - rocky layers only.
  - (a), (b) and (c).
- Earthworms and spiders are important for soil as .....
  - they form tunnels that allow air, water and nutrients to pass easily through soil.
  - they don't have humus.
  - they prevent soil erosion.
  - they make nests in it.
- Soil is important for plants as .....
  - it provides them with nutrients and minerals.
  - it represents the home of some animals.
  - some animals depend on plants in feeding.
  - no correct answer.

## 2. Give reasons for :

(5 marks)

- Roots of plants are important for soil.

.....

.....

- Earthworms and spiders are important for plants.

.....



## Worksheets

3. Water rushing (running water) causes soil erosion.

.....  
 .....

**3. Complete the following sentences by using the following words :** (5 marks)

(clay – Running water – lower soil layers – Winds –  
 lay eggs – Roots of plants – Earthworms)

- ..... lie beneath the top soil layers.
- ..... and ..... break down rocks causing soil erosion.
- ..... prevent soil erosion from happening quickly.
- ..... allow air, water and nutrients to pass easily through soil.

**4. (A) What is meant by ... ?** (5 marks)

1. Humus.

.....  
 .....

2. Soil.

.....  
 .....

**(B) What happens when ... ?**

1. Rocks are exposed to winds.

.....  
 .....

2. Top soil layers don't contain roots of plants.

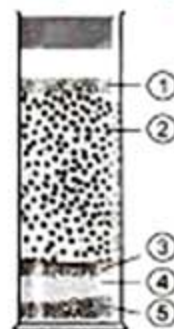
.....  
 .....

**5. The opposite figure represents an experiment to show the soil components.**

**Write the labels :**

(5 marks)

- .....
- .....
- .....
- .....
- .....





## Unit Three

## Lesson 2

Total mark

25

## Worksheet 2

Answer each of the following questions :

## 1. Write the scientific term :

(5 marks)

1. A type of soil that composed mainly of sand particles, a small amount of clay and silt. (.....)
2. A soil composed of a mixture of equal amounts of gravel, sand, clay and silt, but it contains more humus. (.....)
3. The well aerated soil. (.....)
4. A soil that is composed mainly of clay and silt particles. (.....)
5. The grey colour soil. (.....)

## 2. (A) Complete the following questions :

(5 marks)

1. .... soil contains more humus, while .... soil contains rarely humus.
2. .... soil has the fastest drainage of water, while .... soil has the slowest drainage of water.
3. Strawberry and .... grow well in .... soil.

## (B) Cross the odd word out :

1. Pomegranates – Potatoes – Peanut – Cactus. (.....)
2. Rice – Potatoes – Cotton – Wheat. (.....)

## 3. Choose from column (B) what suits in column (A) :

(5 marks)

(A)	(B)
1. Clay soil	a. is suitable for cactus cultivation.
2. It has loose particles	b. clay soil.
3. Sand soil	c. silt soil.
4. The soil that has high absorption of water	d. sand soil.
5. It is suitable for cultivation of pomegranates plant	e. is suitable for cultivation of cotton.

1. ....
2. ....
3. ....
4. ....
5. ....



## Worksheets

## 4. (A) Give reasons for :

(5 marks)

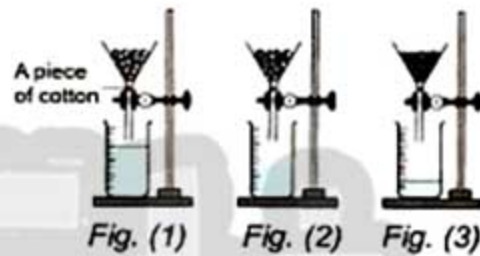
1. Sand soil has yellow colour.

2. The clay soil is poorly aerated.

3. Silt soil is the most suitable soil for cultivation.

## (B) Look at the opposite figures, then mention the type of soil in each funnel : (Giving the reason)

- Funnel in fig.(1) contains ..... soil,  
because .....
- Funnel in fig.(2) contains ..... soil,  
because .....
- Funnel in fig.(3) contains ..... soil,  
because .....



## 5. Put (✓) in front of the right statement and (x) in front of the wrong ones, then correct them :

(5 marks)

1. Peanut plant is cultivated in silt soil. ( )
2. The types of soil are two only which are silt soil and sand soil. ( )
3. The size of clay soil particles is small. ( )
4. Sand soil is moderately aerated. ( )
5. The biggest amount of humus exists in silt soil. ( )



## Unit Three

## Lesson 2

## Worksheet 10

Answer each of the following questions :

## 1. Complete the following statements :

(5 marks)

1. The compactness of ..... soil is very weak, while that of ..... soil is very high.
2. The drainage of sand soil to water is ....., while that of clay soil is .....
3. Strawberry is planted in ..... soil, while sugar cane is planted in ..... soil.
4. The ..... soil contains more humus.
5. The plants that produce tubers are planted in ..... soil, but most of vegetables are planted in ..... soil.

## 2. (A) Cross the odd word out :

(5 marks)

1. Potatoes – Sweet potatoes – Cotton – Cactus. ( ..... )
2. Strawberry – Pomegranates – Oranges – Peanut. ( ..... )
3. Rice – Wheat – Potatoes – Sugar cane. ( ..... )

## (B) Correct the underlined words in each of the following :

1. The sand soil contains a large amount of humus. ( ..... )
2. The colour of soil is yellow due to the presence of humus. ( ..... )

## 3. Compare between sand, silt and clay soils from the point of view : (5 marks)

1. The compactness of the soil.  
.....
2. The aeration.  
.....
3. Absorption of water.  
.....



## Worksheets

## 4. Choose the correct answer :

(5 marks)

- Which of the following plants grow in silt soil ? .....  
 a. Lemon.                      b. Potatoes.                      c. Rice.                      d. Cactus.
- ..... soil rarely contains humus.  
 a. Silt                      b. Clay                      c. Sand                      d. Gravel
- The size of ..... soil particles is between sand and clay soils.  
 a. sand                      b. silt                      c. clay                      d. humus
- ..... soil is well aerated and has non-compacted particles.  
 a. Clay                      b. Silt                      c. Sand                      d. Mud
- ..... has medium drainage of water and medium absorption of water.  
 a. Sand soil                      b. No soil                      c. Clay soil                      d. Silt soil

## 5. (A) Give reason for each of the following :

(5 marks)

- Sand soil is named by this name.

.....

.....

- Sweet potatoes is cultivated in sand soil.

.....

.....

(B) Put (✓) or (x) in front of each of the following sentences and correct the wrong sentences :

- Wheat plant grows in sand soil.

( ) .....

- The spaces between the particles of clay soil are large.

( ) .....

- Sand soil drains water faster than clay soil.

( ) .....



## General Exercise of the School Book on

**Answer each of the following questions :**

**1. Complete the following statement :**

1. The soil types are ....., ..... and .....
2. Sand soil aeration is ....., clay soil compactness is ..... and the silt soil fertility is .....

**2. Put (✓) or (✗) in front of each of the following sentences and correct the wrong sentence :**

1. The sand soil is strongly compacted, has poor ventilation and more fertile.  
( ) .....
2. The clay soil has poor ventilation.  
( ) .....
3. Humus is the remains of fragmented small rocks and was deposited on the Earth's surface.  
( ) .....
4. Cactus plant grows in clay soil.  
( ) .....

**3. Choose the correct answer :**

- The silt soil compactness is .....  

a. strong.

b. weak.

c. medium.
- The particles of the clay soil are .....  

a. tiny.

b. medium.

c. large.
- The water drains easily in the ..... soil.  

a. silt

b. sand

c. clay
- Rice grows efficiently in ..... soil.  

a. clay

b. silt

c. sand



## Worksheets

**4. Write the scientific term for each of the following :**

1. A thin loose layer covering the Earth's crust. ( ..... )
2. The remains of the decayed organisms. ( ..... )
3. A highly fertile soil because it contains suitable dissolved salts and humus. ( ..... )

**5. Give reasons for each of the following :**

1. The sand soil has good aeration.  
.....
2. The water level in the clay soil is higher than the water level in both the sand and silt soils.  
.....  
.....
3. The silt soil fertility is the highest.  
.....
4. The clay soil has poor aeration.  
.....
5. Soils differ in compactness depending on their types.  
.....  
.....  
.....
6. The micro-organisms that live inside the soil have a great importance.  
.....  
.....

**6. Mention three plants that grow in the following soil types :**

- Sand soil : .....
- Silt soil : .....
- Clay soil : .....



## Model Exam

1

## on Unit Three

Total mark  
25

Answer each of the following questions :

## 1. Choose the correct answer :

(5 marks)

- Clay soil .....
  - is well aerated.
  - is rich in humus.
  - is moderately compacted.
  - has moderate percentage of humus.
- ..... is the decayed remains of animals and plants.
  - Humus
  - Silt
  - Sand
  - Clay
- ..... is a thin non-compacted layer that covers the Earth's crust.
  - Sand
  - Humus
  - Soil
  - Air
- Wheat, sugar cane and rice grow well in ..... soil.
  - clay
  - silt
  - sand
  - gravel
- The types of soil are differ in .....
  - colour.
  - shape.
  - texture.
  - all the previous answers.

## 2. Complete the following table :

(5 marks)

Points of comparison	Clay soil	Silt soil	Sand soil
- Colour :	.....	Grey.	.....
- Size of particles :	.....	.....	Large.
- Compactness :	Very compacted.	.....	.....
- Drainage of water :	Low.	.....	.....
- Fertility :	.....	More fertile.	.....

## 3. (A) Give reasons for :

(5 marks)

- The silt soil is moderately aerated.



## Worksheets

2. Rains, winds and running water are factors that cause soil erosion.

.....

3. Roots of plants are important for soil.

.....

.....

.....

## (B) Correct the underlined words :

1. The silt soil is poorly aerated. ( ..... )

2. The sand soil contains more humus. ( ..... )

## 4. (A) Put (✓) or (x) :

(5 marks)

1. Earthworm is useful for the soil. ( )

2. The volume of soil, helps the scientists to identify its elements. ( )

3. The tunnels help the roots of plants to grow and get important materials. ( )

## (B) What happens when ... ?

1. The agricultural soil is not fertile.

.....

2. Absence of micro-organisms from the soil.

.....

## 5. (A) Complete the following statements :

(5 marks)

1. The compactness between the particles of ..... soil is stronger than that between the particles of silt soil.

2. The good aeration is one of the ..... soil properties.

3. Leaves of plants decay forming .....

## (B) Guess what is it ?

It is a type of soil which is highly compacted, suitable plants like vegetables can grow in it and it isn't highly fertile but have a high water absorption.

( ..... )



## Model Exam

2

## on Unit Three

Total mark

25

Answer each of the following questions :

## 1. (A) Write the scientific term :

(5 marks)

1. It is the loose superficial layer of the Earth's crust. ( ..... )
2. The soil that drains water slowly. ( ..... )
3. Parts of plants that prevent soil erosion and help the soil to be cohesive. ( ..... )

## (B) What happens if ... ?

1. There is no soil.  
.....
2. Silt soil is poor in humus.  
.....

## 2. Choose the correct answer :

(5 marks)

1. Which of the following figures can represent the particles of clay soil?



2. The variation in types of soil depends on .....  
 a. the amount of water.                      b. the type of minerals.  
 c. the type of rocks.                              d. (b) and (c).
3. Which of the following plants grow in the clay soil ? .....  
 a. Cotton.                      b. Lemon.                      c. Cactus.                      d. Strawberry.
4. The aeration of the sand soil is .....  
 a. good.                      b. bad.                      c. medium.                      d. no correct answer.
5. Among the examples of living organisms that live in the soil are .....  
 a. bees.                      b. ants.                      c. flies.                      d. no correct answer.

## 3. (A) Give reasons for :

(5 marks)

1. Sand soil is named by this name.  
.....



## Worksheets

2. The clay soil is fertile.

3. Ants and other insects are important for soil.

(B) What is meant by ... ?

Soil.

4. (A) Complete the following statements :

(5 marks)

- ..... take water and nutrients from soil and fix the plant in soil.
- ..... soil is suitable for the cultivation of oranges and lemon.
- Silt soil contains more humus, while ..... soil contains rarely humus.
- ..... soil layers contain roots of plants, ants, spiders and humus.

(B) Classify the following plants in the table below :

( Pomegranates - Wheat - Sweet potatoes - Rice - Peanut - Lemon ).

Sand soil	Silt soil	Clay soil
.....	.....	.....
.....	.....	.....

5. (A) Correct the underlined words :

(5 marks)

- The good aeration is one of the silt soil properties. ( ..... )
- Sand soil absorbs water very well. ( ..... )

(B) Put (✓) or (x) in front of each of the following sentences and correct the wrong sentences :

- Clay soil is the most soil in retaining water.  
( ) .....
- Rice is cultivated in the silt soil.  
( ) .....



# PART 2

## Final Revision



Unit One : Friction.

Unit Two : Circulatory system & urinary system.

Unit Three : The Soil.

هذا العمل خاص بموقع ذاكرولي التعليمي ولا يسمح بتداوله على مواقع أخرى



# Final Revision

## on Unit 1



### 1 Definitions

Item	Definition
1. Friction force :	It is the force between two surfaces in contact that acts in a direction opposite to the direction of motion and causes the object to slow down and stop.
2. Air resistance :	It is a type of friction force resulting from the movement of an object through air.
3. Water resistance :	It is a type friction force resulting from the movement of an object through water.

### 2 Importance or use

Item	Importance or use
Friction force:	<ol style="list-style-type: none"> <li>1. It helps in moving and stopping cars or bicycles.</li> <li>2. It enables us to control the car speed and to change the car direction.</li> <li>3. It enables us to walk as the friction between our shoes and the ground prevents us from slipping down.</li> <li>4. It helps in lighting of a match.</li> <li>5. It helps us to catch and hold things with our hands.</li> </ol>

### 3 Give reasons for

1. If you push a toy car on the floor, it moves for a certain distance till it stops.  
Due to the effect of friction force that arises when the toy car touches the floor.
2. When you stop pedalling during the movement of the bike, it slows down.  
Due to the increase in the friction force.
3. There is a direct relation between the friction force and the surface area of the moving object.  
Because by increasing the surface area of the moving object, the friction force increases and vice versa.



4. • **The friction force depends on the type of the material surface.**
  - **The marble moves on the classroom for a longer distance than that on the playground.**  
Because the friction force increases between rough surfaces and decreases between smooth surfaces.
5. **The friction force between glass and glass is smaller than that between glass and wood.**  
Because the friction force decreases between smooth surfaces and increases between rough surfaces.
6. **Air resistance depends on the speed of the body that moves through air.**  
Because by increasing the speed of the body, the air resistance increases and vice versa.
7. • **Rockets, trains and aircrafts have streamline shapes.**
  - **Bodies of birds have streamline shapes.**  
To decrease the surface area, so the air resistance decreases and the speed increases.
8. **Parachutist opens the parachute on landing.**  
To increase the air resistance by increasing its surface area, so landing speed decreases.
9. **Bat stretches its wings on landing.**  
To increase the air resistance by increasing its surface area, so landing speed decreases.
10. **A fish has a streamline shape.**  
To decrease the surface area, so the water resistance decreases and the speed increases.
11. **When the speed of the swimmer decreases, water resistance decreases.**  
Because the relation between the speed of the moving object through air and water resistance is a direct relationship.
12. **Air resistance and water resistance slow down the movement of the body.**  
Because they act in the opposite direction of the movement.
13. **The car movement needs friction force.**  
To control the car speed and to change the car direction.



**14. Friction force has many disadvantages.**

Because it causes damage for almost of machines, so a lot of money is wasted.

**15. The damage of the internal parts of machines.**

Because the friction between them raises their temperature to more than a certain extent causing their damage.

**16. Mechanical machines must be cooled, when they are operated for a long time.**

Because the friction between their moving parts raises their temperature so, they must be cooled to protect them from damage.

**4 What happens when...?****1. You stop pedalling during the movement of the bike.**

The bike moves, but its speed decreases gradually until it stops due to the effect of friction force.

**2. You increase the surface area of the moving object.**

The friction force increases.

**3. The speed of the aircraft increases.**

The air resistance increases.

**4. A swimmer swims in water with a very high velocity.**

The water resistance increases.

**5. There is no friction between car tires and the ground.**

We can't control the car speed and we can't change the car direction.

**6. Absence of friction between your shoes and the stairs.**

I will slip down.

**7. A machine is operated for a long time without being cooled.**

The friction arises between its moving parts and their temperature increases causing damage of machines and losing a lot of money.

**8. The temperature of the internal moving parts of machines increases.**

The machines are damaged.



## 5 Activities



## Activity

To prove that the friction force depends on the type of the surface material.



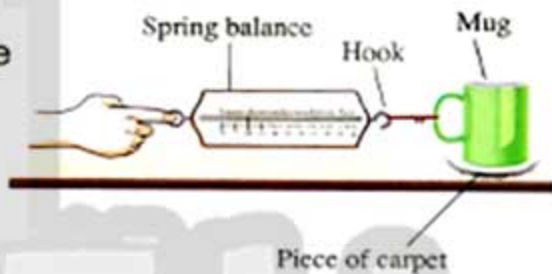
## Materials:

A mug – a spring balance – pieces of carpet, cardboard and silk – a sticky tape – a table.



## Steps:

1. Fix the piece of carpet at the mug base using the sticky tape.
2. Fix the hook of the spring balance to the mug handle.
3. Try to pull the mug of the spring balance at constant speed.
4. Notice the reading of the spring scale.
5. Replace the piece of carpet at the mug base once with the piece of cardboard and another time with the piece of silk and repeat the previous steps.
6. Notice the reading of the spring balance each time.



## Observation:

The spring balance gives a different reading for each material (carpet, cardboard and silk).



## Conclusion:

Friction force depends on the type of surface material, where it increases between rough surfaces and decreases between smooth surfaces.

## 6 Comparison

Between air resistance and water resistance :

Points of comparison	Air resistance	Water resistance
• Definition :	It is a type of friction force resulting from the movement of an object through air.	It is a type friction force resulting from the movement of an object through water.



• <b>Affecting factors :</b>	1. The speed of the object. 2. The surface area of the moving object.	1. The speed of the object. 2. The surface area of the moving object.
• <b>Examples :</b>	Trains, aircrafts and rockets.	Ships, fish and dolphin.

## 7 Important points

- Friction force arises when two surfaces touch each other.
- The direction of the friction force is opposite to the direction of the movement.
- Friction force is the reason for stopping the body during motion.
- When the friction force is larger than the movement force, the body doesn't move and vice versa.
- **Factors affecting friction force are :**
  1. The surface area of the moving object.
  2. The type of the surface material.
  3. The speed of the body.
- **Types of friction are :**
  1. Friction between two solid objects.
  2. Friction between a solid object and air.
  3. Friction between a solid object and water.
- **The factors affecting air resistance and water resistance are :**
  1. The speed of the body.
  2. The surface area of the body.
- **The advantages of friction :**
  1. It helps in moving and stopping cars or bicycles.
  2. It enables us to control the car speed and to change the car direction.
  3. It enables us to walk as the friction between our shoes and the ground prevents us from slipping down.
  4. Lighting of a match.
  5. It help us to catch and hold objects with our hands.



# Final Revision

## on Unit 2



### 1 Definitions

Item	Definition
1. The circulatory system :	It is the system that transports the digested food, oxygen gas and water to all the body cells and carries the wastes to special organs in your body to get rid of them.
2. The heart :	It is a muscular hollow organ equals about the size of your fist.
3. Blood vessels :	They are the paths of blood throughout the body.
4. Arteries :	They are thick-walled blood vessels which emerge from the heart exactly from the two ventricles.
5. Veins :	They are thin-walled blood vessels that begin at the body cells and open in the two atria of the heart.
6. Blood capillaries :	They are network of tiny blood vessels with very thin walls.
7. Red blood cells (RBC'S) :	They are red cells without nuclei.
8. White blood cells (WBC'S) :	They are white cells with different forms of nuclei.
9. Blood platelets :	They are small cell fragments (parts).
10. Plasma :	It is a yellow watery fluid in which all the blood components are suspended.
11. Solid wastes :	They are the indigested food that stored in the large intestine until they pass outside the body.
12. Excretory wastes :	They are the waste materials that produced inside the body cells, where the body must get rid of them.
13. The urinary system :	<ul style="list-style-type: none"> <li>It is the system that clarifies blood from the nitrogenous wastes (urea &amp; uric acid), excess salts and excess water.</li> <li>The group of organs that clarifies the body from the wastes and harmful substances.</li> </ul>
14. The two kidneys :	They are bean shaped organs located on both sides of the backbone.
15. The two ureters :	They are two narrow tubes that connect the two kidneys to the urinary bladder.
16. The urinary bladder :	It is a balloon like sac that receives the urine from the two ureters.



17. Urethra :	It is a tube which extends from the urinary bladder and opens outside the body.
18. Sweat glands :	They are special type of glands inside the skin that produce sweat.

## 2 Importance or use

Item	Importance or use
1. The circulatory system :	<ul style="list-style-type: none"> <li>- It transports the digested food, oxygen gas and water to all the body cells.</li> <li>- It transports wastes that are produced by the body cells to special organs to get rid of them.</li> <li>- It helps in maintaining the body healthy.</li> </ul>
2. The heart :	It pumps the blood continuously throughout the body.
3. The valve between atrium and ventricle :	It allows the blood to flow from the atrium to the ventricle and prevents its returning back.
4. Arteries :	They transport the blood from the heart (two ventricles) to all the body parts.
5. Veins :	They carry blood from all the body parts to the heart at the two atria.
6. Blood capillaries :	<ul style="list-style-type: none"> <li>- They connect the ends of arteries and the beginnings of veins.</li> <li>- Their thin walls allow the blood to deliver digested food and oxygen to the cells and carries carbon dioxide and wastes out of the cells.</li> </ul>
7. Red blood cells (RBC'S) :	<ul style="list-style-type: none"> <li>- They carry oxygen gas from the lungs to all the body cells.</li> <li>- They carry carbon dioxide gas from all the body cells to the lungs.</li> </ul>
8. White blood cells (WBC'S) :	They defend the body against microbes by attacking them.
9. Blood platelets :	They help in coagulation of blood (formation of blood clot), so they help in healing wounds.
10. Plasma :	<ul style="list-style-type: none"> <li>- It carries the needed food digested substances to the body cells.</li> <li>- It carries the harmful wastes that formed in the cells to another cells to get rid of them.</li> </ul>



11. Blood :	<ul style="list-style-type: none"> <li>• It transfers or delivers some materials to all body cells, where :               <ul style="list-style-type: none"> <li>- The <b>red blood cells</b> carry oxygen and carbon dioxide.</li> <li>- <b>Plasma</b> transports digested food, vitamins, salts and harmful wastes.</li> </ul> </li> <li>• It defends and protects the body, where :               <ul style="list-style-type: none"> <li>- <b>White blood cells</b> attack microbes that cause diseases to human.</li> <li>- <b>Blood platelets</b> help in healing wounds.</li> <li>- The <b>blood</b> keeps the temperature of the body constant.</li> </ul> </li> </ul>
12. The two lungs in excretion process :	They are used to get rid of carbon dioxide gas during the exhalation process.
13. The urinary system :	It is used to get rid of the nitrogenous wastes (urea and uric acid), excess salts and excess water.
14. The skin :	It gets rid of excess salts and some excess water in the form of sweat.
15. The two kidneys :	<ul style="list-style-type: none"> <li>- They filter the blood from some wastes as urea, uric acid, excess salts and other waste materials.</li> <li>- They get rid of these wastes in the form of urine.</li> </ul>
16. The two ureters :	They transfer the excretory materials (urine) from the two kidneys to the urinary bladder.
17. The urinary bladder :	It stores the urine temporarily until it is released outside the body through urethra.
18. Urethra :	It allows the urine to pass outside the body.

### 3 Give reasons for

1. The circulatory system is called the system of transferring in the human body.  
Because it transports oxygen, digested food and water to all the body cells and transports the wastes to special organs to get rid of them.
2. The two sides of the heart are separated.  
To prevent the mixing of blood in the two sides of the heart.
3. The heart contains valves.  
To allow the blood to pass from the atrium to the ventricle and not in the opposite direction.
4. Blood flows in one direction inside the heart.  
Due to the presence of one way valve between each atrium and ventricle.



**5. The wall of the left ventricle is more thicker than that of the right one.**

Because the left ventricle pushes the blood to all the body parts, while the right ventricle pushes the blood to the two lungs only.

**6. The blood is in a liquid form.**

Because it contains plasma which is a yellow watery fluid.

**7. Blood capillaries have thin walls.**

To allow the blood to deliver digested food and oxygen to the cells, then carry carbon dioxide and wastes.

**8. The red blood cells have a great importance.**

Because they carry oxygen from the lungs to all the body cells and carry carbon dioxide from the cells to the lungs.

**9. The blood platelets have a role in healing wounds.**

Because they coagulate blood (form blood clot) to prevent bleeding when the body is wounded and the blood is exposed to air.

**10. Plasma of the blood is important.**

Because it carries the needed digested food substances to the cells and carries the harmful waste products away from the cells.

**11. • White blood cells keep your body healthy.****• The white blood cells are called the defence cells.**

Because they defend the body against microbes.

**12. Aorta is the largest artery in the body.**

Because it carries the blood from the heart to all the body parts.

**13. Blood is a very important fluid.**

Because it is necessary for :

- The transfer of materials to all the body cells.
- The defence and protection of the body.

**14. • It is necessary to keep exercising.****• We should not eat a lot quantity of fats.**

To strengthen the heart muscle and to activate the blood circulation.

**15. Smoking must be avoided.**

Because it harms the heart and weakens the blood circulation.



**16. It is necessary to avoid the exposure to infections and accidents.**

To keep our circulatory system healthy.

**17. The human body must get rid of the excretory materials.**

Because the excretory materials contain poisonous materials and other harmless materials that the body can't use them.

**18. The body cells release their wastes into the blood.**

Because the blood carries these wastes to special organs to get rid of them.

**19. The skin is one of the excretory organs.**

Because the skin gets rid of some excess salts and excess water in the form of sweat.

**20. Faeces cannot be considered as an excretory material.**

Because faeces is an indigested food that stored in the large intestine until it passes out of the body.

**21. The urinary system is very important.**

Because :

- It filters the blood from some excess salts, urea and uric acid and other waste materials.
- It expels these wastes outside the body in the form of urine.

**22. The urinary system contains urinary bladder.**

To store the urine temporarily until it is released outside the body.

**23. If the two kidneys are damaged, the person will die.**

Because they filter the blood from the excretory materials which contain poisonous materials.

**24. The two kidneys protect us from poisoning.**

Because they filter the blood from the poisonous excretory materials.

**25. There are two ureters in the urinary system.**

To transfer the excretory materials (urine) from the two kidneys to the urinary bladder.

**26. Man urinates less in summer than in winter.**

Because secreting sweat increases in summer due to the high temperature.

**27. Sweat has salty taste.**

Because the sweat consists of some excess salts and excess water.



28. **The presence of sweat glands inside the skin.**  
To get rid of some excess salts and excess water in the form of sweat.
29. **Urinary bladder has a sac like structure.**  
To store urine until it is released outside the body.
30. **You must not keep urine for long periods.**  
To keep the kidneys or the urinary system healthy.
31. **You must not urinate or wash in the irrigation canals.**  
To avoid the infection by schistosomiasis disease.
32. **You must eat food low in salts.**  
To keep your urinary system healthy.

#### 4 What happens when ... ?

1. **The two sides of the heart are not separated.**  
The blood in the two sides of the heart will be mixed.
2. **There are no valves between the upper and the lower chambers of the heart.**  
The blood will return back from the ventricles to the atria during the contraction of the heart (ventricles).
3. **Blood capillaries have thick walls.**  
The blood can't deliver digested food and oxygen to the cells and can't carry carbon dioxide and wastes.
4. **The left ventricle contracts.**  
It will push the blood to all the body parts through aorta.
5. **Blood platelets are absent from the blood.**  
More bleeding will occur when the body is wounded.
6. **The microbes attack the body.**  
The white blood cells will attack these microbes.
7. **Your body is wounded.**  
The blood platelets will form blood clot to prevent bleeding.
8. **Your run around for 5 minutes with respect to heartbeats.**  
The rate of your heartbeats will increase.



**9. Smoking cigarettes.**

Smoking will harm your heart and weakens the blood circulation.

**10. The human body can't get rid of its waste materials.**

The waste materials will harm the body causing poisoning.

**11. The two kidneys are completely damaged.**

The excretory materials will remain in the blood causing poisoning.

**12. The urinary bladder is removed.**

We couldn't store urine until releasing it outside the body.

**13. There are no ureters in the urinary system.**

The urine can't be transferred from the two kidneys to the urinary bladder.

**14. There are no sweat glands in the skin.**

The skin can't excrete some of the excess salts and water in the form of sweat.

**15. The human body keeps urine for a long period of time.**

The urinary system will be harmed and the functions of the kidneys will be affected.

**16. You eat food contains large amount of salt.**

This will harm the urinary system and the two kidneys.

**17. You drink a little amount of water daily.**

The urinary system will be harmed.

**5 Comparisons****1. Between arteries and veins :**

Points of comparison	Arteries	Veins
• Thickness :	They are thick-walled blood vessels.	They are thin-walled blood vessels.
• Function :	They carry the blood from the heart to all the body parts.	They carry the blood from all the body parts to the heart.
• Examples :	- Pulmonary artery. - Aorta.	- Pulmonary veins. - Superior vena cava and inferior vena cava.



## Final Revision

## 2. Between red blood cells, white blood cells and blood platelets.

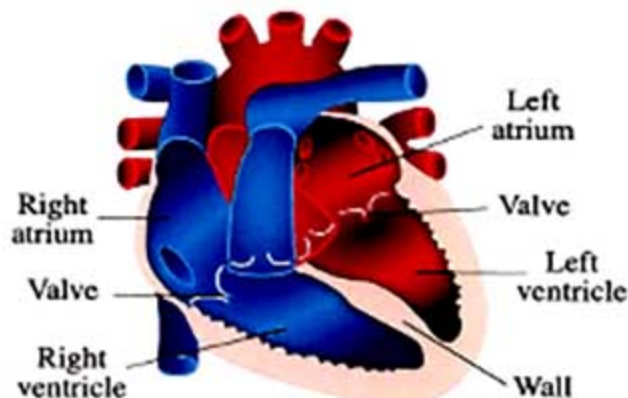
Points of comparison	Red blood cells	White blood cells	Blood platelets
1. Definition :	They are red cells without nuclei.	They are white cells with different forms of nuclei.	They are small cell fragments.
2. Function :	<ul style="list-style-type: none"> <li>- They carry oxygen gas from lungs to all the body cells.</li> <li>- They carry carbon dioxide gas from all the body cells to the lungs.</li> </ul>	They defend the body against microbes by attacking them.	They help in coagulation of blood (formation of blood clot) so, they help in healing wounds.

## 3. Between the excretory materials and solid materials.

Excretory materials (cell wastes)	Solid wastes
They are the waste materials formed inside the cells and carried by the blood to special organs to get rid of them.	They are the indigested food which is stored in the large intestine before passing out of the body.

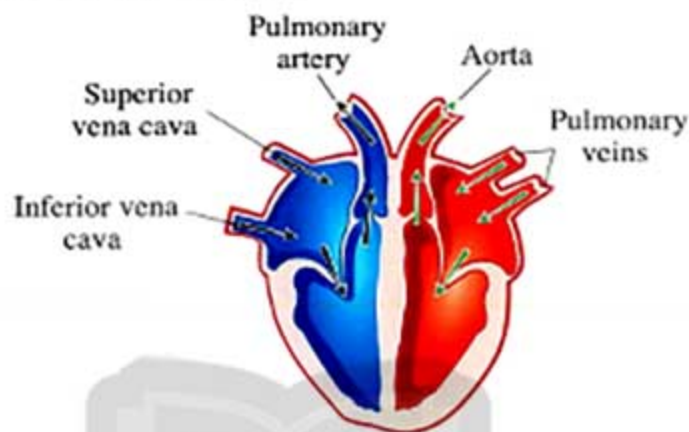
## 6 Important drawings

## 1. The structure of the heart :

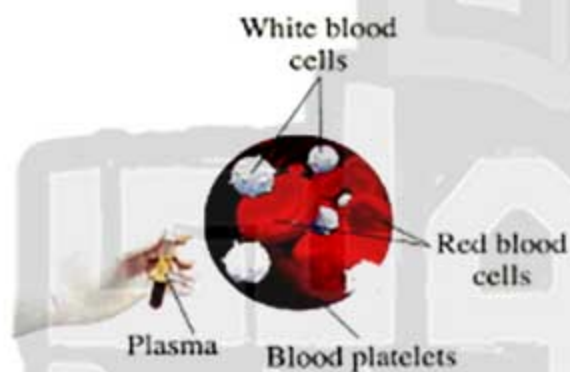




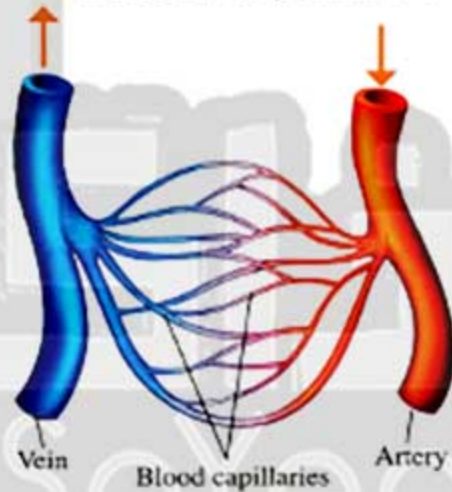
## 2. Arteries and veins of the heart :



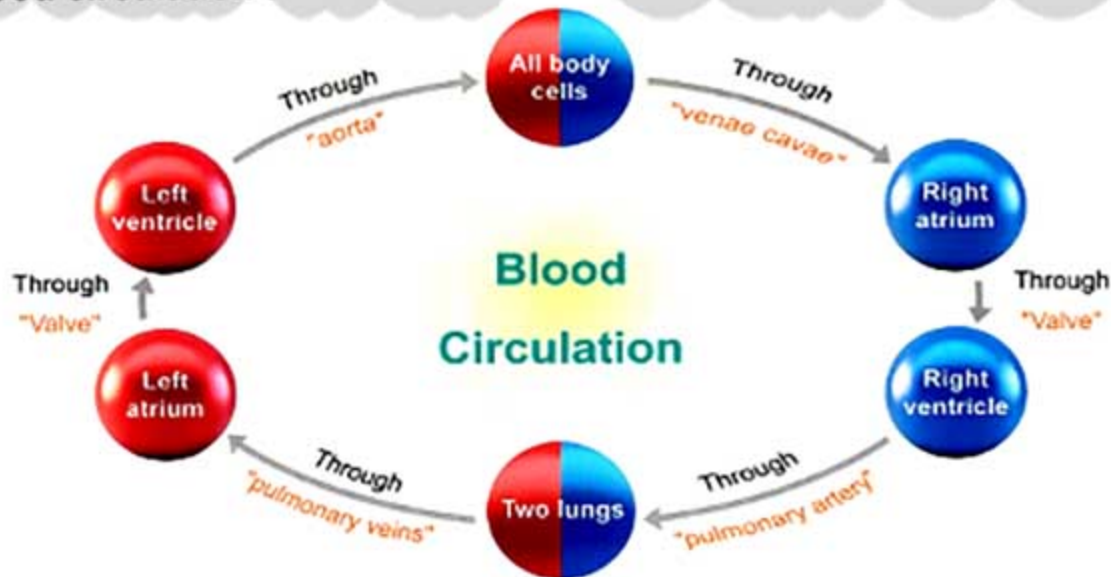
## 3. The components of the blood :



## 4. Blood capillaries :

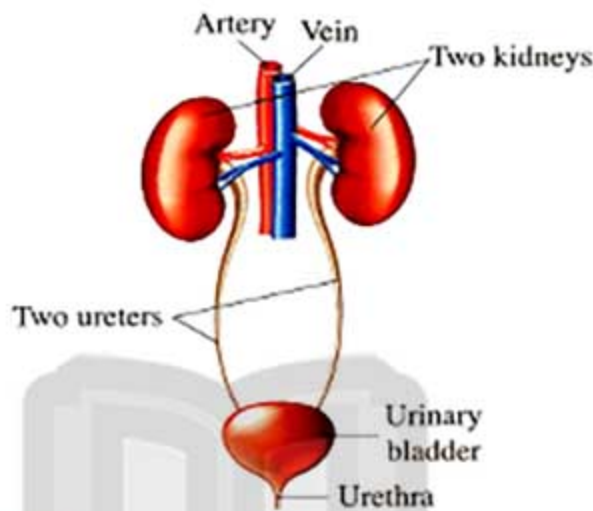


## 5. Blood circulation :





## 6. The urinary system :



## 7 Important points

- \* The circulatory system consists of **heart, blood vessels** and the **blood**.
- \* The heart consists of **four chambers** located in two sides.
- \* All arteries carry blood rich in oxygen except the **pulmonary artery** which carries **blood rich in carbon dioxide**.
- \* **Blood** is a red liquid that consists of red blood cells, white blood cells, blood platelets and plasma.
- \* The number of heartbeats at rest is 70 beats per minute.
- \* **How to maintain the circulatory system health :**
  1. Keep exercising to strengthen the heart muscle and to activate the blood circulation.
  2. Eat healthy and balanced food (low in fats and salt).
  3. Eat more fresh and clean vegetables and fruits.
  4. Drink a suitable amount of clean water everyday especially in summer.
  5. Avoid exposure to infections and accidents.
  6. When you are wounded :
    - a. Try to stop the bleeding.
    - b. Clean the wound and treat it.
  7. Avoid smoking and smokers, where smoking :
    - a. Harms the heart.
    - b. Weakens the blood circulation.



**\* Wastes of the body may be :**

- Solid wastes (indigested food).
- Excretory wastes (the cell wastes).

**\* How to keep the urinary system healthy :**

1. Drink suitable amounts of clean water daily especially in summer.
2. Eat balanced healthy food that is low in salt.
3. Keep away from irrigation canals to avoid schistosomiasis disease.
4. Don't keep urine for a long periods because this affects the function of kidneys.





# Final Revision

## on Unit 3



### 1 Definitions

Item	Definition
1. Soil :	It is a thin non-compacted (loose) superficial (upper) layer which covers the Earth crust.
2. Humus :	It is the decayed remains of animals and plants mixed with the soil components and its colour is dark brown or black.
3. Sand soil :	It is the soil that composed mainly of sand particles, a small amount of clay and silt and rarely contains humus.
4. Silt soil :	It is the soil that composed of a mixture of equal amounts of gravel, sand, clay and silt, but it contains more humus.
5. Clay soil :	It is the soil that composed mainly of clay and silt particles and a small amount of sand and humus.

### 2 Importance or use

Item	Importance or use
1. Soil :	It is the main component of the environment as it is necessary for all living organisms (plants, animals and human).
2. Colour of the soil :	It helps the scientists to identify the elements and minerals inside it.
3. Pieces of rocks :	They are the main source of sand and clay which are the main components of soil.
4. Humus :	It adds nutrients to soil.
5. Clay and silt particles :	They are rich in elements that are necessary for plant growth.
6. Running water :	It helps in the breaking down of rocks causing soil erosion.
7. Change of temperature :	They help in the breaking down of rocks causing soil erosion.
8. Winds :	They help in the breaking down of rocks causing soil erosion.
9. Roots of plants :	<ul style="list-style-type: none"> <li>• They are very important for plants as :               <ul style="list-style-type: none"> <li>- They take water and nutrients from soil.</li> <li>- They fix the plant in the soil.</li> </ul> </li> <li>• They are very important for soil as :               <ul style="list-style-type: none"> <li>- They help the soil to be cohesive.</li> <li>- They prevent the soil erosion from happening quickly.</li> <li>- They provide the soil with nutrients as they are converted into humus after death.</li> </ul> </li> </ul>



10. Leaves of plants :	They form humus when they decay after death.
11. Ants and other insects :	They form humus when they decay after death.
12. Earthworms and some spiders :	- They help in the growth of plant roots. - They form humus when they decay after death.
13. Sand soil :	It is necessary for cultivation of : - Plants that produce tubers as potatoes and sweet potatoes. - Plants which give fruits beneath (under) soil surface as peanut plant. - Cactus.
14. Clay soil :	It is suitable for cultivation of cotton, rice, sugar cane, wheat and many vegetables.
15. Silt soil :	It is suitable for growing certain plants as strawberry, lemon, oranges and pomegranates.

### 3 Give reasons for

#### 1. The variation in types of soil.

Due to the variation in types of rocks and minerals that form soil.

#### 2. The soil is the main component of the environment.

Because it is necessary for :

- Plant growth.
- Animals and humans that eat these plants.
- Some animals as they make their homes in soil.

#### 3. Soil is necessary for plants.

Because plants take minerals and other nutrients from the soil to live and grow.

#### 4. Soil is very important for animals.

Because :

- They eat plants that previously depend on soil.
- Some animals depend on soil as a shelter.

#### 5. Soil is very important for humans.

Because they eat plants and animals that previously depend on soil.

#### 6. The colour of soil is dark brown or black.

Due to the colour of humus which is dark brown or black.



- 7. Running water and winds are from the factors that causes soil erosion.**  
Because running water and winds break down rocks into small pieces which cause soil erosion.
- 8. Clay and silt are very important components for soil.**  
Because they are rich in elements that are necessary for plant growth.
- 9. Roots of plants are important for soil.**  
Because :  
- They help the soil to be cohesive.  
- They add nutrients to soil as they convert into humus after death.  
- They prevent the soil erosion from happening quickly.
- 10. Roots are very important for plants.**  
Because they take water and nutrients from soil and fix the plant in the soil.
- 11. A lot of organisms as earthworms and some spiders are important for plants.**  
Because :  
- They help in the growth of plant roots, as the tunnels that are formed by them allow air, water and nutrients to pass through soil, then to the plant roots.  
- When these organisms die, their bodies decay forming humus.
- 12. Humus is important for soil.**  
As it provides the soil with nutrients.
- 13. Ants and other insects are important for soil.**  
Because they form humus when their bodies decay after death.
- 14. Soil is important for ants and other insects.**  
Because they need it to make nests and lay eggs.
- 15. Soil is important for earthworms and some spiders.**  
Because soil represents the shelter of them, as they make their homes underground by digging tunnels.
- 16. Digging tunnels by insects and earthworms is important for plants.**  
Because these tunnels allow air, water and nutrients to pass easily through soil, then to plant roots causing their growth.
- 17. The organisms that live inside the soil have a great importance.**  
Because :  
- Their tunnels allow air, water and nutrients to pass to plant roots causing their growth.  
- When they die, their bodies decay forming humus that adds nutrients to soil and plants.



**18. Sand soil is named by this name.**

Because it is composed mainly of sand particles.

**19. Soils differ in compactness according to their types.**

Because the particles of sand soil are weakly compacted, the particles of silt soil are moderately compacted and the particles of clay soil are highly compacted.

**20. The water level in the clay soil is higher than the water level in both sand and silt soils.**

Because the compactness between the particles of clay soil are larger than the compactness in both sand and silt soils, so the rising of water is higher in clay soil than in silt and sand soils.

**21. The sand soil is well aerated.**

Because it has weakly compacted particles.

**22. The clay soil retains the biggest amount of water.**

Because it has the slowest drainage of water.

**23. The silt soil is moderately aerated.**

Because it has moderately compacted particles.

**24. The clay soil is poorly aerated.**

Because it has highly compacted particles.

**25. The clay soil has the slowest drainage of water.**

Because its particles are highly compacted.

**26. The sand soil is well aerated and has a high ability to drain water.**

Because its particles are weakly compacted (loose).

**27. • The silt soil has the medium drainage of water.**

**• The silt soil has moderately absorption of water.**

Because its particles are moderately compacted.

**28. The sand soil has the fastest and greatest drainage of water.**

Because its particles are weakly compacted (loose).

**29. • The silt soil has the highest fertility.**

**• The silt soil is the most suitable soil for cultivation.**

Because it is rich in humus.

**30. The clay soil is fertile.**

Because it contains medium amount of humus.

**31. The sand soil is less fertile.**

Because it rarely contains humus.



**32. Potatoes and sweet potatoes grow in sand soil.**

Because sand soil is suitable for cultivation of plants that produce tubers as potatoes and sweet potatoes.

**33. Peanut plant grows in sand soil.**

Because sand soil is suitable for cultivation of plants which give fruits beneath (under) the soil surface as peanut.

**4 What happens when ... ?****1. Living organisms die.**

Humus can be formed.

**2. There is no soil.**

Plants can't grow and there is no food for animals and humans and there is no shelter for some animals.

**3. Rocks are exposed to running water and winds.**

They are broken into small particles with different shapes and sizes.

**4. Absence of roots of plants from the soil.**

- The soil erosion occurs quickly.
- Soil is poor in nutrients as humus isn't formed.
- Soil isn't cohesive.
- Plants cannot be fixed in the soil.

**5. There aren't microorganisms in the soil.**

Humus can't be formed and plants will die.

**5 Comparisons**

*Between sand, silt and clay soils :*

Points of comparison	Sand soil	Silt soil	Clay soil
1. Mainly components :	Sand particles.	Mixture of gravel, sand, clay, silt and more humus.	Clay and silt particles.
2. Colour :	Yellow.	Grey.	Dark (black).
3. The size of particles :	Large.	Medium.	Small.
4. Compactness :	Weakly compacted (loose).	Moderately compacted.	Highly compacted (hard).



5. Aeration :	Good.	Medium.	Poor.
6. Drainage of water :	Fast and great.	Medium.	Slow.
7. Holding of water :	Less.	Medium.	More.
8. Water absorption :	Low.	Medium.	High.
9. Fertility :	Less fertile.	Highly fertile.	Fertile.
10. Suitable plants :	Potatoes, sweet potatoes, peanut and cactus.	Strawberry, lemon, oranges and pomegranates.	Cotton, wheat, sugar cane, rice and many vegetables.

## 6 Activities



### Activity 1

To prove that soil is composed of many components.

#### Steps:

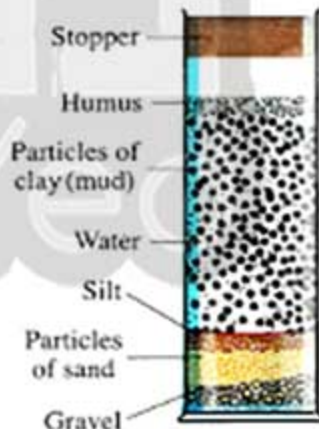
1. Bring a graduated cylinder or jar and fill it up to the middle with a sample of your school garden soil.
2. Fill the cylinder with water and cover it tightly.
3. Shake the cylinder strongly, then put it on a table and leave it for 15 minutes.

#### Observation:

Soil is composed of different components as shown in the opposite figure.

#### Conclusion:

Soil is composed of humus, water, sand, clay (mud), silt and gravel.







## Activity 2

To show the difference between the size of particles of sand soil, silt soil and clay soil.



### Steps:

Bring three equal samples of sand, silt and clay soils, then examine them by a magnifying glass.



### Observation:

1. The size of particles of sand soil is larger than silt soil.
2. The size of particles of silt soil is larger than clay soil.



### Conclusion:

The particles of :

- Sand soil are large in size.
- Silt soil are medium in size.
- Clay soil are small in size.



## Activity 3

To show the compactness between the particles of sand soil, silt soil and clay soil.



### Steps:

1. Put three equal samples of clay, silt and sand soils separately in three similar dishes.
2. Add an amount of water to each sample, then expose the three samples to Sun and air till they become dry.
3. Try to crush each sample by your fingers.



### Observations:

- The compactness between the particles of clay soil is larger than silt soil.
- The compactness between the particles of silt soil is larger than sand soil.



Clay soil



Silt soil



Sand soil



**Conclusion:**

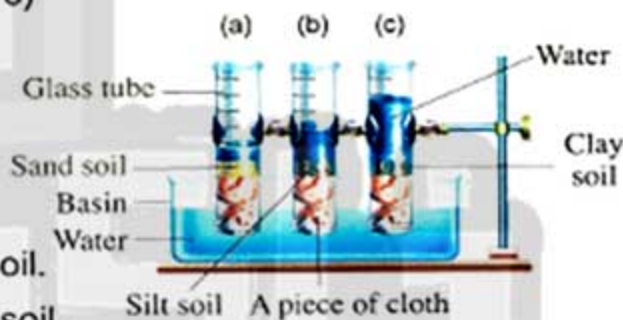
- The particles of **clay soil** are highly compacted (hard).
- The particles of **sand soil** are weakly compacted (loose).
- The particles of **silt soil** are moderately compacted.

**Activity 4**

To show the aeration and water absorption in sand, silt and clay soils.

**Steps:**

1. Get three similar glass tubes (a , b , c) open from both ends.
2. Cover one end of each tube with a piece of cloth, then put in :
  - Tube (a) an amount of sand soil.
  - Tube (b) the same amount of silt soil.
  - Tube (c) the same amount of clay soil.



3. Immerse the three covered ends of the three tubes at equal depths in a basin containing water.

**Observation:**

Water rises in the three tubes at different levels, where the water level in tube (c) is larger than that in tubes (a) and (b).

**Conclusion:**

- The **sand soil** is a well aerated soil that has low absorption of water.
- The **clay soil** is a poorly aerated soil that has highly absorption of water.
- The **silt soil** is a moderately aerated soil that has moderately absorption of water.





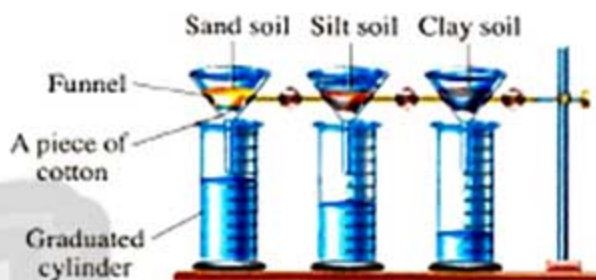
### Activity 5

To show the drainage of water through sand, silt and clay soils.

Form the opposite figures :

#### Observations:

- The sand soil drains water faster than silt soil that retains more water than sand soil.
- The silt soil drains water faster than clay soil that retains more water than silt soil.



#### Conclusion:

- The **sand soil** has the fastest and greatest drainage of water and the lowest retention of water.
- The **clay soil** has the slowest drainage of water and the highest retention of water.
- The **silt soil** has the medium drainage of water and the medium retention of water.



### Activity 6

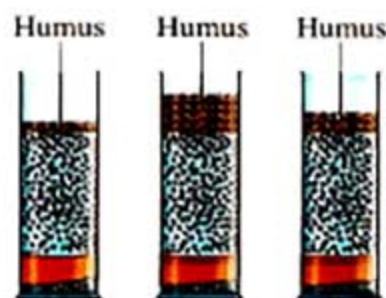
To show the fertility of sand, silt and clay soils.

#### Steps:

1. Put each type of soil in a graduated cylinder, then pour enough water in each cylinder.
2. Shake each cylinder strongly, then leave it to stand for 15 minutes.

#### Observations:

The cylinders contain different amount of humus, where humus is large in silt soil, small in sand soil and medium in clay soil.





### Conclusions:

- The **silt soil** is highly fertile as it is rich in humus.
- The **clay soil** is fertile as it has medium amount of humus.
- The **sand soil** is less in fertility as it is poor in humus.

### 7 Important Points

- The texture of soil is **smooth** or **granular** or **rocky rough**.
- Soil is composed of **pieces of rocks, water, air, silt** and **humus**.
- **Sand, clay, minerals** and **gravels** are the components of rocks.
- The main components of soil are **sand, humus** and **clay**.
- When the living organisms die, their bodies decay forming **humus**.
- **Water rushing (running water), winds, heat** and **rains** are the affecting factors on rocks to break down causing soil erosion.
- **Soil is composed of three layers which are :**
  - a. Top soil layers.
  - b. Lower soil layers.
  - c. Rocky layers.
- **Top soil layers contain :**
  - Roots of plants.
  - Leaves of plants.
  - Organisms as earthworms , ants , spiders and some insects.
  - Humus.
  - Small pieces of rocks.
- **Lower soil layers** lie beneath the top soil layers and don't have much humus.
- The **upper layers** of rocky layers contain **pieces of rocks**, but their **lower layers** contain **solid rocks**.
- Types of soil are **sand soil, silt soil** and **clay soil**.
- **Potatoes, sweet potatoes, peanut, cactus** are cultivated in **sand soil**.
- **Cotton, rice, sugar cane, wheat** and **many vegetables** are cultivated in **clay soil**.
- **Strawberry, lemon, oranges** and **pomegranates** are cultivated in **silt soil**.



PART

3

# Final Examinations

**Important note :**

There is an additional question at the end of the school examinations on the parts which are canceled from the syllabus of the previous year.



Answer the following questions :

**1. Complete the following statements :**

1. The circulatory system transports ..... and ..... to all body cells.
2. .... is a thin non-compacted layer that covers the .....
3. Birds have ..... shape to ..... air resistance.

**2. Write the scientific term :**

1. The bean shaped organs which located in abdominal cavity. (.....)
2. Cells that carry oxygen and carbon dioxide. (.....)
3. A thin non-compacted upper layer that covers the Earth's crust. (.....)
4. A force arises when two objects touch each other. (.....)
5. A black material adds nutrients of the soil. (.....)
6. The two organs which excrete carbon dioxide. (.....)

**3. [A] Choose the correct answer :**

1. Urea and uric acid are produced from breaking down of .....  
 a. proteins.                      b. fats.                      c. carbohydrates.
2. By increasing the speed of the ship through water, water resistance will .....  
 a. increase.                      b. decrease.                      c. be constant.
3. .... begin with blood capillaries.  
 a. Arteries                      b. Veins                      c. White blood cells
4. .... helps the soil to be cohesive.  
 a. Roots                      b. Leaves of the plant                      c. Earthworm
5. The friction force decreases .....  
 a. between rough surfaces.                      b. between smooth surfaces.  
 c. by increasing the surface area.

**[B] Write the function of :**

1. Skin :

.....

2. The valve :

.....



## Final Examinations

## 4. [A] Compare between Arteries and Veins :

Points of comparison	Arteries	Veins
1. Thickness :	..... .....	..... .....
2. Function :	..... .....	..... .....
3. Examples :	.....	.....

## [B] Give reasons for :

1. Man urinates less in summer.

.....

2. When you roll a ball on the ground it slows down until it stops.

.....

## Additional questions

## [A] Complete the following sentences :

- The main types of soil are ..... and .....
- ..... soil is more compactable.

## [B] Give a reason for :

The good aeration of the sand soil.

.....

2

Cairo Governorate

Patriarchal College

Answer the following questions :

## 1. [A] Complete the following statements :

- Nitrogenous wastes consists of ..... and .....
- The valve is found between ..... and .....
- Friction force acts in the ..... direction of motion.



4. Decay of dead organisms produce ..... that is found on the surface of the soil.
5. The reason of stopping a ball after pushing it on ground is .....
6. Kidneys are located in both sides of .....

**[B] State one use :**

1. The wall between the 2 sides of the heart.

2. Red blood cells.

**2. [A] Choose the correct answer :**

1. The skin helps the body to get rid of .....
  - a. sweat.
  - b. urine.
  - c. carbon dioxide.
  - d. water vapour.
2. Its colour is dark brown or black is .....
  - a. sand.
  - b. humus.
  - c. rocks.
  - d. minerals.
3. All the following are from the excretory materials except .....
  - a. carbon dioxide.
  - b. sugar.
  - c. nitrogenous wastes.
  - d. excess salts.
4. By increasing the surface area, friction force .....
  - a. increases.
  - b. decreases.
  - c. equal.
  - d. (a) and (b).
5. The force that opposes the motion of the boat in water is called .....
  - a. air resistance.
  - b. water resistance.
  - c. friction force.
  - d. (a) and (b).
6. The heart is a muscular pump about the size of your .....
  - a. fingers.
  - b. foot.
  - c. fist.
  - d. hand.

**[B] Give reasons for :**

1. The blood capillaries have thin walls.



## Final Examinations

2. There are valves in the heart.

.....  
 .....

3. Birds have streamline shapes.

.....  
 .....

### 3. [A] Write the scientific term :

1. The two lower chambers of the heart. (.....)
2. A thin non-compacted layer that covers the Earth's crust. (.....)
3. A force resulted from the motion of a bird through air. (.....)
4. A yellow watery fluid in which all blood components float. (.....)
5. Remains of decayed organisms that increase the soil fertility. (.....)
6. Tiny blood vessels that connect the end of arteries with the beginning of veins. (.....)

### [B] Put (✓) or (x) and correct the wrong sentences if they are wrong :

1. The soil is originated from the disintegration of rocks. ( )  
 .....
2. Friction force is the reason for stopping any body during motion. ( )  
 .....
3. Eating diets rich in fats and salts activate the circulatory system. ( )  
 .....
4. The soil is made up of rocks, air, water and humus. ( )  
 .....

### 4. [A] What happens when ... ?

1. The temperature of the internal parts of machines increases.  
 .....
2. You increases the surface area of the moving object.  
 .....
3. You drink a little amount of water daily.  
 .....



**[B] What's meant by ... ?**

1. Friction force.

2. Soil.

3. Circulatory system.

**Additional questions****[A] Choose the correct answer :**

1. The soil that has the fastest drainage of water and the lowest absorption of water is the .....

a. sand soil.

b. clay soil.

c. silt soil.

2. .... soil absorbs water very well.

a. Sand

b. Silt

c. Clay

**[B] Give a reason for :**

The clay soil is poorly aerated.

**Answer the following questions :****1. [A] Choose the correct answer :**

1. The rubber ball moves longer distance on a ..... surface.

a. dry cement

b. ceramic

c. sand

d. (b) and (c)

2. .... are network of tiny blood vessels.

a. Arteries

b. Veins

c. Blood capillaries

d. Blood platelets

3. .... get rid of carbon dioxide out of the body.

a. Kidneys

b. Skin

c. Lungs

d. Heart

4. Soil erosion is affected by all the following except .....

a. wind.

b. water.

c. light.

d. temperature.



## Final Examinations

[B] Look at the opposite figure, then answer :

1. What is the name of this organ ? and What is its size ?

.....

2. What is the function of this organ ?

.....



[C] What happens if ... ?

1. The skin is wounded.

.....

2. There is no soil.

.....

.....

2. [A] Write the scientific term :

- Decayed remains of dead animals and plants mixed with the soil. ( ..... )
- A force opposite the motion of the boat in river. ( ..... )
- A largest artery which carries blood from heart to all body parts. ( ..... )
- A special gland in the skin that excretes sweat. ( ..... )

[B] Mention one importance of :

1. Roots of plant to the soil.

.....

2. Kidney.

.....

[C] Look at the picture, then answer the following questions :

1. What is the living organism do you see in this picture ?

.....

2. Is this living organism useful or harmful to the soil ? Why ?

.....





## 3. [A] Choose (True) or (False) :

1. Veins are blood vessels that emerge from the heart. (True – False)
2. Keeping the urine for a long time benefits the urinary system. (True – False)
3. The top soil layer contains solid rocks. (True – False)
4. There is a direct relation between friction force and speed of the object. (True – False)

## [B] Give reasons for :

1. There is a valve between each atrium and ventricle in the heart.  
.....
2. Bat stretches its wings on landing.  
.....

## [C] Complete the missing words in the following figures :



Car (A)

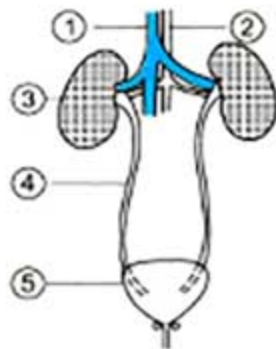


Car (B)

Car (A) has a ..... shape that reduces the ..... which acts in the opposite direction of motion.

## 4. [A] Look at the opposite figure, then answer the questions :

1. What is the number of organ that stores urine ?  
.....
2. What is the number of organ that carries pure blood ?  
.....
3. What is the number of the organ that transfers urine from kidney to urinary bladder ?  
.....
4. What is the name of this system ?  
.....





## Final Examinations

[B] Complete the following tables of comparison :

1.	Point of comparison	Blood	Urine
	Components (structure) :	.....	.....
		.....	.....
2.	Point of comparison	Atria	Ventricles
	Connected to arteries or veins :	.....	.....
		.....	.....

## Additional questions

[A] Put (✓) or (x) :

1. Wheat plant grows in sand soil. ( )
2. The spaces between the particles of clay soil are large. ( )

[B] Give a reason for :

The silt soil has the medium drainage of water.

## 4 Cairo Governorate

East Nasr City Educational Directorate

Answer the following questions :

1. Complete the following statements :

1. The friction force has its effect in the ..... direction of the objects movement.
2. The heart consists of ..... chambers and ..... sides.
3. .... are the main organs of the urinary system.
4. The friction force ..... by increases of the surface area.
5. Blood consists of red blood cells, white blood cells, ..... and .....
6. .... is a balloon like sac.
7. Soil is a ..... thin layer covers .....
8. The friction force increase between ..... surface and decrease between ..... surface.



## 2. Write the scientific term :

1. A friction force between air and the moving object through. ( ..... )
2. The blood cells which carry oxygen. ( ..... )
3. The narrow tube which connects with the kidney and urine passes through it. ( ..... )
4. The veins which carry the blood from the lungs to the left atrium. ( ..... )
5. The remains of the decayed organisms. ( ..... )
6. A force that slows down the moving object and has its effect in the opposite direction of the objects movement. ( ..... )

## 3. Correct the underlined words :

1. The air resistance decreases when the car speed increases. ( ..... )
2. Urea is expelled by the lungs. ( ..... )
3. The force of magnetism affects the car movement and stopping. ( ..... )
4. Veins carry blood from heart to the whole body. ( ..... )
5. Water add nutrients to the soil. ( ..... )
6. The heart is a muscular pump in a size of your foot. ( ..... )

## 4. [A] Put (✓) or (x) :

1. Water and temperature break down rocks into small pieces. ( )
2. Earthworms and spiders dig tunnels in the rocky layer. ( )
3. The aorta delivers blood to all the body parts. ( )
4. The parachutist opens his parachute, the friction force decreases. ( )

## [B] Give reasons for :

1. The fish has a streamline shape.

.....

2. The heart contains valves.

.....



## Final Examinations

## Additional questions

## [A] Complete the following sentences :

1. .... soil absorbs water very well.
2. The main types of soil are ....., ..... and .....

## [B] What is meant by ... ?

The fertility of soil.

.....

5

Cairo Governorate

Notre Dame Des Apôtres School Shoubra

Answer the following questions :

## 1. [A] Complete the following :

1. The urine passes from kidney through ..... to a balloon like sac organ called ..... to store urine temporarily.
2. The effect of the friction force is in the opposite direction of .....
3. There are three types of blood vessels which are arteries and ....., .....
4. Water and ..... break down rocks in to small pieces.

## [B] Give reasons for :

1. The red blood cells have a great importance.
- .....
- .....

2. Bat stretches its wings on landing.
- .....
- .....

3. We should not eat a big quantity of fats.
- .....

## 2. [A] Write the scientific term :

1. A friction force that resulting from the movement of any object in water. (.....)
2. The lower two chambers in the heart. (.....)
3. A thin non-compacted layer that covers the Earth's crust. (.....)



4. Organ filters the blood from wastes as urea, uric acid. (.....)
5. Decayed remains mixed in soil component. (.....)
6. A yellow watery fluid that found in the blood. (.....)

**[B] What is the importance of :**

1. White blood cells.

.....  
 .....

2. Friction force.

.....  
 .....

3. Sweat glands.

.....

**3. [A] Choose the correct answer :**

1. Blood vessels which carry blood from the heart are the .....  
 a. arteries.                      b. veins.                      c. blood capillaries.
2. Carbon dioxide and water vapour are released by .....  
 a. kidneys.                      b. lungs.                      c. heart.
3. The fish has streamline shape to ..... the water resistance.  
 a. decrease                      b. increase                      c. (a) and (b)
4. .... form blood clot and help in healing wounds.  
 a. Blood capillaries                      b. Veins                      c. Platelets
5. The digested food transferred to the body cells by .....  
 a. plasma.                      b. red blood cell.                      c. white blood cell.
6. The heart is a muscular pump in a size of your .....  
 a. fingers.                      b. foot.                      c. fist.

**[B] Give reasons for each of the following :**

1. The presence of a valve between each atrium and ventricle.  
 .....
2. Roots of plants are important for soil.  
 .....
3. Avoid keeping urine in the urinary bladder for long periods of time.  
 .....



**4. [A] Put (✓) or (x) and correct the wrong :**

1. The heart is composed of four sides. ( )  
.....
2. Sweat has sugary taste. ( )  
.....
3. The main components of soil are sand, gravel and humus only. ( )  
.....
4. The parachutist opens his parachute to increase air resistance. ( )

**[B] What is a bad effect of ... ?**

1. Smoking.
- .....
2. Friction force.

### Additional questions

**[A] Give a reason for :**

The clay soil is poorly aerated.

**[B] Put (✓) or (x):**

1. The sand soil is strongly compact has poor ventilation and fertile. ( )
2. The colour of sand soil is black while that of the clay soil is grey. ( )

6

## Cairo Governorate

El Ma'aref Language School

**Answer the following questions :**

**1. [A] Complete the following sentences :**

1. The blood flows from atrium to ..... through .....
2. The urinary system consists of two kidneys, ..... and .....
3. From the factors affecting friction force are ..... and .....

**[B] How to maintain the urinary system healthy ?**



**2. [A] Correct the underlined word :**

1. **Plasma** helps in coagulation of blood when the body is wounded. ( ..... )
2. **Kidney** Keeps the body temperature constant. ( ..... )
3. The tube which extends from the bladder and opens outside the body is the **ureter**. ( ..... )

**[B] Write the scientific term :**

1. Friction force between water and the moving object through. ( ..... )
2. Cells which carry oxygen from the lungs to all body cells. ( ..... )
3. The two lower chambers of the heart. ( ..... )

**3. [A] Give reasons for :**

1. Smoking must be avoided.
2. Rockets have a streamline shape.
3. Skin is one of the excretory organs.

**[B] Choose the correct answer :**

1. The heart is a muscular pump in a size of your .....  
a. vein.                      b. foot.                      c. fist.
2. The breaks of the car is an application on .....  
a. energy.                      b. motion.                      c. friction.
3. The friction is in a direction ..... to the movement force.  
a. opposite                      b. parallel                      c. same
4. Cells defend the body against microbes are .....  
a. Plasma.                      b. blood platelets.                      c. white blood cells.
5. Blood vessels which carry blood from the heart to the body are the .....  
a. arteries.                      b. veins.                      c. blood capillaries.
6. Carbon dioxide and water vapour are released by the .....  
a. lungs.                      b. veins.                      c. skin.

**4. [A] Put (✓) or (x) and correct the wrong ones :**

1. Eating diets rich in fats and salts activate the circulatory system. ( )
2. Birds stretch their wings during landing to decrease air resistance. ( )
3. The urinary system function is to filter the blood from excess salts, urea and uric acid. ( )



## Final Examinations

**[B] What happens when ... ?**

1. Running for 10 minutes with respect to heartbeats.
- .....

2. There is no separation wall between the two sides of the heart.
- .....

**Additional questions****[A] Put (✓) or (x) :**

1. Cactus plant is seen in sand soil. ( )
2. The particles of clay soil are loose. ( )

**[B] Arrange the different types of soils :**

Ascendingly according to the size of particles.

.....

**7****Giza Governorate**

Beverly Hills Language School

Answer the following questions :

**1. [A] Complete the following statements :**

1. .... atrium receives blood from the two lungs through the pulmonary veins.
2. The force that slows down the object motion is called .....
3. Water and ..... break rocks into small pieces.
4. Red blood cells carries ..... and .....

**[B] What is the importance of roots for the soil ? (two points only).**

.....

.....

**2. [A] Write the scientific term :**

1. A yellow watery fluid in which the blood cells float. ( ..... )
2. Cells resist the microbes which attack the body. ( ..... )
3. The system that clarifies blood from uric acid, urea and excess salts. ( ..... )



4. The soil layer which contains the roots of plants, leaves of plants, ants, insects and earthworm. ( ..... )

**[B] Compare between ... ?**

points of comparison	Arteries	Veins
1. Thickness :	.....	.....
2. Example :	.....	.....
3. Function :	.....	.....

**[C] Choose the correct answer :**

- ..... begin large and become wide at the heart.  
a. Arteries      b. Venis      c. Blood platelets      d. Blood capillaries
- The kidneys have a (an) ..... shape.  
a. bean      b. pea      c. urethra
- The soil colour changes usually between black and dark brown due to the presence of .....  
a. sand.      b. humus.      c. rocks.      d. spiders.
- Urea and Uric acid produced from the breaking down of .....  
a. protein.      b. fats.      c. salts.

**3. [A] Put (✓) or (✗), then correct the wrong one:**

- Kidney filters excess water and salts from the human's food. ( )  
.....
- During riding a bicycle, there is a magnetic force between the bicycle tires and the road. ( )  
.....
- The aorta delivers blood to the lungs. ( )  
.....

**[B] What happens when ... ?**

- There is no wall between the two sides of the heart.  
.....
- Absence of blood platelets.  
.....



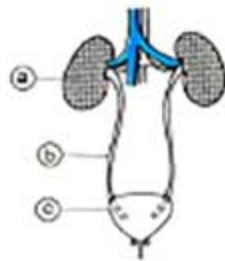
## Final Examinations

[C] Look at the opposite figure, then answer :

1. The figure represents .....

2. Label the figure :

- (a) .....  
(b) .....  
(c) .....



4. [A] Give reasons for :

1. The sweat has salty taste

Because .....

2. The colour of the soil is dark brown or black.

Because .....

3. The heart contains a valve between each atrium and ventricle.

Because .....

4. Fish has a streamline shape.

Because .....

[B] State the function of ... ?

The Urinary bladder.

.....

.....

[C] What is meant by ... ?

Air resistance.

.....

.....

### Additional questions

[A] Mention three examples of plants that grow in the clay, silt and sand soils.

.....

.....

.....

[B] Put (✓) or (x) :

1. The particles of clay soil are loose.

( )

2. Wheat, potatoes and catcus grow in sand soil.

( )



## 8

## Giza Governorate

Sheikh Zayed Educational Directorate  
Modern Infinity Language School

**Answer the following questions :**

**1. [A] Complete the following sentences :**

1. The heart is a muscular organ equal the size of your .....
2. The friction force between the water and ..... is called water resistance.
3. Rockets have ..... shape to decrease the air resistance.
4. The friction force is in the ..... direction of movement.
5. The heart contain ..... to prevents mixing the blood between left side and right side.
6. Sweat has ..... taste.

**[B] How can you maintain the circulatory system and urinary system :**

Circulatory system	Urinary system
1. ....	1. ....
2. ....	2. ....
3. ....	3. ....

**2. Choose the correct answer :**

- Heart consists of ..... chambers.  
a. 2                                      b. 3                                      c. 4
- ..... are special glands that found in the skin help in the getting rid of wastes.  
a. Sweat                                      b. Liver                                      c. Lungs
- The function of red blood cells is .....  
a. blood clotting.                                      b. carrying the digested food.  
c. carrying oxygen.                                      d. (b) and (c).
- ..... are the two narrow tubes that transport urine to urinary bladder.  
a. Urethra                                      b. Ureters                                      c. Gall bladder
- ..... is responsible for filtering the urine from the blood.  
a. Urinary bladder                                      b. Kidney                                      c. Urethra
- ..... is a dark brown material that affect the colour of the soil.  
a. Humus                                      b. Rocks                                      c. Sand



## Final Examinations

## 3. [A] Put (true) or (false) between brackets :

- Birds stretch their wings on landing to decrease the air resistance. ( ..... )
- Urination process decrease in winter than in summer. ( ..... )
- White blood cells help in the blood clotting (coagulation). ( ..... )
- All arteries carry blood rich in carbon dioxide. ( ..... )

## [B] Give reasons for :

- Friction force has many disadvantages.

.....

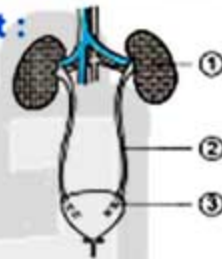
.....

- Blood capillaries have thin wall.

.....

## 4. [A] Look at the opposite figure, then complete the missing part :

- .....
- .....
- .....



## [B] Write the scientific term :

- The force that arises between two surfaces when they touch each other. ( ..... )
- The fluid which is produced by kidneys and contains harmful substance. ( ..... )
- Blood cells that defend our bodies against microbes. ( ..... )

## Additional questions

## [A] Complete the following sentences :

- The main types of soil are ..... and .....
- ..... soil absorbs water very well.

## [B] Give a reason for :

The good aeration of the sand soil.

.....



**9**

## Giza Governorate

## October Educational Directorate

**Answer the following questions :**

**1. [A] Complete the following sentences :**

1. The friction force affects the ..... direction of movement.
2. The heart is located within the chest cavity between the .....
3. The ..... blood cells carry oxygen and carbon dioxide inside the body.
4. .... is the most important organ of the urinary system.

**[B] Give a reason for:**

Car has a streamline shape.

**2. [A] Write the scientific term for each of the following :**

1. The friction force between water and the moving objects through. ( ..... )
2. The lower two chambers of the heart. ( ..... )
3. Thin non-compacted layer that covers the Earth crust. ( ..... )
4. The system that filters blood from urea, uric acid and excess salts. ( ..... )

**[B] Correct the underlined words :**

1. The colour of humus is usually green. ( ..... )
2. **Plasma** help in healing wounds and forming clot. ( ..... )

**3. [A] Choose the correct answer :**

- The special glands in the skin that secrete sweat is .....  
a. heart.                      b. kidney.                      c. sweat gland.
- Carbon dioxide and water vapour are expelled outside the body through .....  
a. lungs.                      b. heart.                      c. kidneys.
- The heart is in the size of your .....  
a. finger.                      b. foot.                      c. fist.
- Blood vessels carry blood from heart is .....  
a. veins.                      b. blood capillaries.                      c. arteries.
- ..... dig tunnels in soil.  
a. Lions                      b. Earthworms                      c. Cats



**[B] Write the function of :**

**The white blood cells.**

**4. Put (✓) or (✗) :**

1. Friction necessary for lighting a match. ( )
2. Eating diets (meals) rich in fats and salts activate the circulatory system. ( )
3. Blood capillaries have thin walls. ( )
4. Heartbeats decrease during exercises. ( )
5. Man urinates in summer more than winter. ( )
6. There is valve between atrium and ventricle within heart cavity. ( )

### Additional questions

**[A] Choose the correct answer :**

1. The soil that has the fastest drainage of water and lowest absorption of water is the .....
  - a. sand soil.
  - b. clay soil.
  - c. silt soil.
2. .... soil absorbs water very well.
  - a. Sand
  - b. Silt
  - c. Clay.

**[B] Give a reason for :**

The silt soil has the highest fertility.

10

## Giza Governorate

Kendasa Educational Directorate

**Answer the following questions :**

**1. Complete the following sentences :**

1. .... is connected to the kidney and transfers ..... to the urinary bladder.
2. The upper chamber of heart called ..... and the lower chamber called .....
3. The circulatory system consists of heart, ..... and .....
4. Blood consists of ....., plasma, blood platelets and .....
5. Factors affecting friction force are ..... and .....



**2. [A] Write the scientific term :**

1. A friction force between air and moving object through. ( ..... )
2. Special glands inside skin that produce sweat. ( ..... )
3. A muscular hollow organ equal to the size of your fist. ( ..... )
4. A thin non-compacted layer that cover Earth crust. ( ..... )
5. The decayed remains of animal and plants and its colour is black. ( ..... )
6. A balloon like sac organs that store urine. ( ..... )

**[B] What is the function of ... ?**

1. Roots of plants.
- .....
2. White blood cells.
- .....
3. Valves in heart.

**3. [A] Put (✓) or (x) :**

1. Friction force acts in the same direction of motion. ( )
2. The rate of heart beats increase when running. ( )
3. Urine is stored in the kidney. ( )
4. Platelets are the liquid part of the blood. ( )
5. Heart is consisted of 5 champers. ( )
6. Blood keep the temperature of the body constant. ( )

**[B] Give reasons for :**

1. Sweat has a salty taste.
- .....
2. The fish has a streamline shape.

**4. [A] Choose the correct answer :**

- 1.** The heart is a muscular pump in a size of your .....
- a. vein.                      b. foot.                      c. fist.



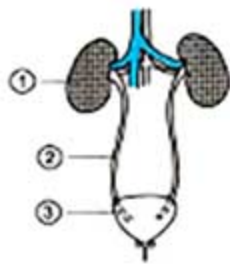
## Final Examinations

2. Carbon dioxide and water vapour are released by the .....  
 a. kidney.                      b. lungs.                      c. heart.
3. .... dig tunnels in the soil to make nests.  
 a. Earthworms                      b. Some spiders  
 c. Ants and other insects                      d. Plant roots

[B] 1. The opposite figure represents ..... system.

**2. Label the figure :**

- ① .....  
② .....  
③ .....



### Additional questions

[A] Put (✓) or (x) :

1. Cactus plant is seen in sand soil. ( )
2. The particles of clay soil are loose. ( )

**[B] Give a reason for :**

The clay soil is poorly aerated.

## 11 Alexandria Governorate

Brilliance Language School

**Answer the following questions :**

**1. Complete the following by using the following list :**

(surface area - lungs - speed - sweat - nutrients - streamline - atrium - minerals - ventricle - decrease).

1. The body gets rid of carbon dioxide gas through ....., while it gets rid of excess salts and water through skin in form of .....
2. The soil provides plants with ..... and .....
3. .... and ..... are factors affecting water resistance.
4. The upper chamber of the heart is called ..... and the lower chamber is called .....
5. Birds and bats have ..... shape to ..... air resistance.



## 2. Put (✓) or (✗) :

- The friction force is always in the same direction of the movement of an object. ( )
- Top soil layers contain roots of plants and humus only. ( )
- Heartbeats decrease during exercises. ( )
- Kidneys are the main organ in the urinary system. ( )
- Eating food containing a lot of fats affects the circulatory system. ( )
- If there is no wall in the heart, the blood will be mixed in both sides. ( )

## 3. Choose the correct answer :

- Blood vessels which carry blood from all body cells to the heart are called .....  
a. arteries.                      b. veins.                      c. blood capillaries.
- Nitrogenous wastes are produced from breaking down of .....  
a. fats.                      b. sugar.                      c. proteins.
- Soil can be formed by the effect of ..... on rocks.  
a. running water                      b. wind  
c. all the previous answers
- The friction force between water and the objects moving through it is called .....  
a. ground resistance.                      b. air resistance.                      c. water resistance.
- The colour of soil is dark brown or black due to the presence of .....  
a. humus.                      b. sand.                      c. rocks.
- Blood flows in one direction only inside the heart due to the presence of .....  
a. artery.                      b. valve.                      c. vein.

## 4. [A] Write the scientific term from the following words :

(Friction force - Soil - Heart - Urinary system)

- The thin non - compacted layer which covers the Earth's crust. ( ..... )
- The system that clarifies the blood from excess salts, urea and uric acid. ( ..... )
- A hollow muscular organ about the size of your fist. ( ..... )
- Force that slows down the moving object. ( ..... )



## Final Examinations

[B] Choose from column (A) what's suitable it from column (B) :

(A)	(B)
1. Red blood cells	a. It's a watery fluid.
2. White blood cells	b. coagulate blood.
3. Blood platelets	c. carry oxygen gas from lungs to all body cells.
4. Plasma	d. defend the body against microbes.

1. ....

2. ....

3. ....

4. ....

## Additional questions

[A] Give a reason for :

The silt soil has the medium drainage of water.

[B] Put (✓) or (x) :

1. Wheat plant grows in sand soil. ( )
2. The spaces between the particles of clay soil are large . ( )

12

Qalyoubia Governorate

Memphis Language School

Answer the following questions :

1. [A] Complete the following sentences :

1. Nitrogenous substances are ..... and .....
2. Water and ..... break down rocks into small pieces.
3. Blood consists of ..... , ..... and .....
4. The rise in temperature of the moving parts of machines is due to .....

[B] Give reasons for :

1. The skin is one of the excretory organs.

2. Rockets and aircrafts have streamline shape.

3. The soil is the main component of the environment.



[C] Put (✓) or (x) and correct the wrong one :

1. Keeping the urine for long time benefits the urinary system. ( )  
.....
2. The two kidneys are located on both sides of the heart. ( )  
.....
3. Air resistance decreases when the car moves so fast. ( )  
.....
4. The heart has two sides. ( )  
.....

2. [A] Write the scientific term :

1. The blood vessel that transfers blood from the heart to the lungs. ( )
2. A force opposes the motion of a boat in the river. ( )
3. Thin loose upper layer which covers the Earth's crust. ( )

[B] Mention one Importance of the following ... ?

1. kidney.  
.....
2. Roots of plants to the soil.  
.....
3. The circulatory system.  
.....

3. [A] Choose the correct answer :

1. .... are small bodies play a role in blood coagulation when the body is wounded.  
a. White blood cells      b. Red blood cells      c. Platelets
2. Water vapour and carbon dioxide are released by the .....  
a. heart.      b. kidney.      c. lungs.
3. The nitrogenous wastes are produced from breaking down of .....  
a. fats.      b. proteins.      c. starch.
4. The skin helps the body get rid of .....  
a. sweat.      b. carbon dioxide.      c. urine.



## Final Examinations

[B] What happens when .. ?

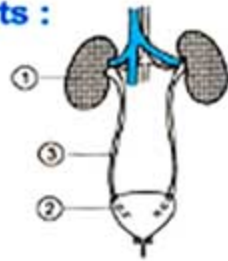
1. Absence of roots of plants from the soil.  
.....

2. Bat stretches its wings on landing.  
.....

4. [A] Look at the opposite figure, then complete the missing parts :

1. Label the figure :

- ① .....  
② .....  
③ .....



2. Write the function of number ②  
.....

[B] Correct the underlined words :

1. There is pushing force between the bicycle tires and the road. ( ..... )  
2. The upper chambers of the heart are called ventricles. ( ..... )  
3. The lungs are the main organ in urinary system. ( ..... )

[C] Compare between :

Point of comparison	Air resistance	Water resistance
Defination :	..... ..... .....	..... ..... .....

## Additional questions

[A] Put (✓) or (x) :

1. Cactus plant is seen in sand soil. ( )  
2. Wheat, potatoes and cactus grow in sand soil. ( )

[B] Mention three examples of plants that grow in the clay, silt and sand soils.

.....  
.....  
.....



## 13 Qalyoubia Governorate

## Al Resala Language School

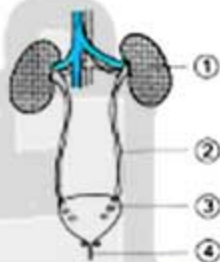
Answer the following questions :

1. [A] Complete the following sentences :

1. Water resistance is a type of ..... force that occurs due to object's motion in .....
2. Urine consists of ....., ....., excess salts and .....
3. .... blood cells carry oxygen and carbon dioxide gases, while ..... carry needed digested food to all body cells.
4. The ..... adds nutrients to the soil.
5. Blood capillaries connect between ends of arteries and beginnings of ..... and they have ..... walls.

[B] Write the labels :

- ① .....
- ② .....
- ③ .....
- ④ .....



2. [A] Correct the underlined words :

1. The plasma helps in healing wounds and forming clot. (.....)
2. Air resistance acts in the same direction of the movement. (.....)
3. The two lungs extract urine from the blood. (.....)
3. Earthworm is harmful for the soil. (.....)

[B] Cross the odd word out, then write the name of the others ?

1. Arteries - veins - atria - blood capillaries.
  - The odd word is : .....
  - The name of the others : .....
2. Urea - uric acid - excess salts and water - food.
  - The odd word is : .....
  - The name of the others : .....



## Final Examinations

## [C] Give reasons for :

1. The presence of valve between each atrium and ventricle.

.....  
 .....

2. Roots of plants are important for the soil.

.....  
 .....

3. Sweat has a salty taste.

.....  
 .....

4. Ships are designed in streamline shape.

.....  
 .....

## 3. [A] Write the scientific term :

1. A muscular organ, equals about the size of your closed fist. ( ..... )  
 2. The balloon like sac organ that stores the urine temporarily. ( ..... )  
 3. The remains of the decayed organisms. ( ..... )  
 4. The two organs that get rid of carbon dioxide and water vapour. ( ..... )  
 5. A yellow watery fluid in which blood cells are suspended. ( ..... )  
 6. A thin loose (non-compacted) layer that covers the Earth's crust. ( ..... )

## [B] Match :

(A)	(B)
1. White blood cells	a. carry blood from all body cells to the heart.
2. Urethra	b. are the upper chambers of the heart.
3. Veins	c. carry blood from the heart to all body cells.
4. Atria	d. defend body against microbes.
	e. allows the urine to pass outside the body.

1. ....

2. ....

3. ....

4. ....



**[C] What happens when ... ?**

1. The speed of the speed boat increases. (regarding to the friction force)  
.....
2. Eating food containing a lot of salt.  
.....
3. Microbes attack the body.  
.....
4. You increase the surface area of a moving object. (regarding to the friction force).

**4. [A] Choose the correct answer :**

- The friction between your shoes and the ground prevents .....  
a. walking.                      b. running.  
c. slipping down.                d. writing.
- There is a (an) ..... between the two sides of the heart.  
a. valve                          b. wall                          c. vein
- The ..... is (are) the main organ(s) in the urinary system.  
a. two kidneys                  b. two ureters.                  c. urethra
- Swimming in the irrigation canals causes ..... disease.  
a. heart                          b. influenza                      c. bloody urine
- Why does the rate of heartbeats increase during exercise ? .....  
a. To get more energy.        b. To get more oxygen.        c. Both (a) and (b).

[B] Put (✓) or (x) :

1. Soil is composed of two layers only. ( )
2. Eating meals rich in fats activate the circulatory system. ( )
3. Friction is necessary for lighting a match. ( )
4. Keeping the urine and delaying getting rid of it benefits the urinary bladder. ( )
5. There are two chambers and four sides within the heart cavity. ( )
6. Birds stretch their wings during landing to decrease air resistance. ( )



## Final Examinations

[C] Label the opposite figure :

- ① .....  
 ② .....  
 ③ .....  
 ④ .....



## Additional questions

[A] Complete the following sentences :

1. .... soil absorbs water very well.  
 2. The main types of soil are ..... and .....

[B] Give a reason for :

The clay soil has the slowest drainage of water.  
 .....

14

Menofia Governorate

Shebeen El-Kaum Educational Directorate

Answer the following questions :

1. [A] Complete the following statements :

1. The nitrogenous wastes are ..... and .....  
 2. From the factors that affect the friction ..... and .....  
 3. From the components of soil ..... and .....

[B] What is the function (importance) of each of the following :

1. Soil.  
 .....

2. Blood platelets.  
 .....

2. [A] Write the scientific term :

1. Type of friction force resulting from object movement in water. ( ..... )  
 2. A decayed remains of animals and plants mixed with the soil components, its colour is dark brown or black. ( ..... )  
 3. They are ends of arteries and beginnings of veins. ( ..... )  
 4. A thin non-compacted superficial layer that covers the Earth's crust. ( ..... )



[B] Give reasons for each of the following :

1. The fish has a streamline shape.

.....

2. The roots of plant are important for soil.

.....

3. [A] Choose the correct answer :

1. The body gets rid of carbon dioxide through .....

a. lungs.

b. skin.

c. sweat.

2. The ..... of the soil helps the scientists to determine the elements and minerals.

a. colour

b. texture

c. silt

3. .... carry oxygen from the lungs to the body cells.

a. Red blood cells

b. Plasma

c. Blood platelets

4. The friction force is in the ..... direction of motion.

a. same

b. opposite

c. perpendicular

[B] What happens when ... ?

1. When the left atrium contracts.

.....

2. There is no friction between your shoes and the ground.

.....

4. [A] Put (✓) or (x) :

1. Car movement needs friction.

( )

2. Eating meals rich in fats activates the circulatory system.

( )

3. The cells that have no nuclei are the red blood cells.

( )

4. The two atria are the two lower chambers of the heart.

( )

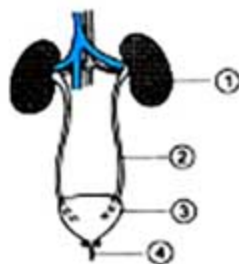
[B] Label the figure :

① .....

② .....

③ .....

④ .....





### Additional questions

[A] Choose the correct answer :

1. The soil that has the fastest drainage of water and the lowest absorption of water is the .....  

a. sand soil.

b. clay soil.

c. silt soil.
2. .... soil absorbs water very well.  

a. Sand

b. Silt

c. Clay

**[B] Give a reason for :**

**Sand soil is named by this name.**

## 15 Gharbeya Governorate

Al - Gharbeya Educational Directorate

**Answer the following questions :**

**1. [A] Complete the following sentences :**

1. Friction is needed to ..... the speed of the car and change its .....
2. Heart is located within the ..... cavity between the .....
3. There is a valve between the ..... and ..... on each side of the heart.
4. From the components of the soil, gravels, ..... and .....

**[B] Compare between each of the following :**

1. Red blood cells and white blood cells (in terms of their functions).

```
*****
*****
*****
*****
```

2. A car moves at higher speeds and a car moves at lower speeds. (in terms of the effect of air resistance).

```

#####
#####
#####
#####

```



## 2. [A] Choose the correct answer :

- Blood vessels which carry blood from the heart are the .....  
a. arteries.                      b. veins.                      c. blood capillaries.
- The right ventricle contracts pumping blood into ..... that carries blood to the lungs.  
a. pulmonary artery              b. pulmonary vein              c. aorta artery
- Carbon dioxide and water vapour are released by the .....  
a. kidneys.                      b. lungs.                      c. heart.
- ..... take water and nutrients from the soil.  
a. Leaves                      b. Stem                      c. Roots

## [B] What happens when ... ?

- You smoke cigarettes.  
.....
- The organisms die in the soil.  
.....

## 3. [A] Write the scientific term for each of the following :

- The force that slows down the object motion. ( ..... )
- The narrow tube which is connected to the kidney and urine passes through it. ( ..... )
- The two lower chambers of the heart. ( ..... )
- A yellow watery fluid in which blood cells float. ( ..... )

## [B] Give reasons for each of the following :

- The fish has streamlined shape.  
.....
- Blood capillaries have a thin wall.  
.....

## 4. [A] Put (✓) or (x) :

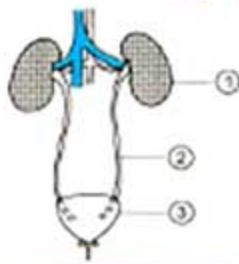
- The friction force is always in the same direction of the object's movement. ( )
- The aorta artery delivers blood to the lungs. ( )
- Ureter is a tube that extends from the bladder to open outside of the body. ( )
- Minerals resulted from break down the rocks. ( )



## Final Examinations

[B] The opposite figure represents an important system in the human body :

1. What is the name of this system ? .....
2. No. ① represents the .....
3. No. ② represents the .....
4. No. ③ represents the .....



## Additional questions

[A] Mention three examples of plants that grow in clay soil.

[B] Put (✓) or (x) :

1. The sand soil is strongly compact has poor ventilation and fertile. ( )
2. The colour of sand soil is black, while that of the clay soil is grey. ( )

16

Al-Dakahliya Governorate

West Mansoura Educational Directorate

Answer the following questions :

1. [A] Complete the following :

1. Blood enters the heart through ..... and leaves through .....
2. Friction force increases between ..... surfaces and decreases between ..... surfaces.
3. Kidneys are ..... shaped organs that are located at the both sides of .....
4. The factors that causes breaking down of rocks are ..... and .....

[B] Give reasons for :

1. The two lungs are excretory organs.

.....

2. Blood flows in one direction only inside the heart.

.....

3. The importance of white blood cells.

.....

4. The importance of the plant roots for the soil.

.....



[C] Arrange the path of urine through the following organs :

Ureter – Kidney – Urethra – Urinary bladder

2. [A] Write the scientific term :

1. A thin non-compacted layer that covers Earth's crust. (.....)
2. The force that opposes the motion of a boat in water. (.....)
3. The lower chambers of the heart. (.....)
4. Wastes that are produced from breaking down of proteins. (.....)
5. One of the blood components that carries oxygen gas. (.....)
6. The remains of the decayed organisms. (.....)

[B] What happens when ... ?

1. You keep urine for long time.  
.....
2. No friction force between your shoes and the ground.  
.....
3. You run for 5 minutes (with respect to the heartbeats).  
.....

3. [A] Choose the correct answer :

1. The car brakes is an application on .....  
a. energy.                      b. friction.                      c. motion.
2. The heart consists of ..... chambers.  
a. 2                                  b. 4                                  c. 6
3. When the parachutist open his parachute during landing, air resistance .....  
a. increases.                      b. decreases.                      c. does not change.
4. The special glands in the skin that secrete sweat is called .....  
a. heart.                              b. kidney.                              c. sweat glands.
5. The two upper chambers of the heart are called .....  
a. atria.                              b. ventricles.                              c. aorta.

[B] Mention the function of :

1. Ureter.  
.....
2. Heart.  
.....



## Final Examinations

[C] You drop two similar sheets of paper, one of them is folded and the other unfolded which of them reaches the ground first ? and why ?

.....

.....

## 4. [A] Put (✓) or (x) :

- |  |     |
|--|-----|
| 1. Avoid smoking harms the heart.                                | ( ) |
| 2. Blood of both sides of the heart can be mixed.                | ( ) |
| 3. Air resistance increases by increasing the speed of the body. | ( ) |
| 4. Blood capillaries have thin walls.                            | ( ) |
| 5. The indigested food is stored in the small intestine.         | ( ) |
| 6. The sweat has sweet taste.                                    | ( ) |

## [B] Define :

1. Blood platelets.
- .....

2. Friction force.
- .....
- .....

## Additional questions

## [A] Complete the following sentences :

1. The main types of soil are ..... and .....
2. Silt soil is ..... aerated.

## [B] Give a reason for :

The good aeration of the sand soil.

.....

17

Ismailia Governorate

Science Inspectorate

Answer the following questions :

## 1. [A] Complete the following :

1. The effect of friction force is in the ..... direction of the object movement.

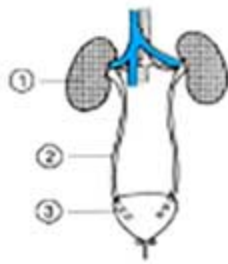


2. There is a ..... between the two side of the heart.
3. Water and ..... break down rocks into small pieces.
4. Solid wastes are stored in .....

**[B] In the opposite figure :**

- a. The opposite figure represents ..... system.
- b. Label the figure :

- ① .....
- ② .....
- ③ .....



**[C] Correct the underlined words in each of the following :**

1. The relation between the surface area of the moving object and air resistance is an inverse relation. ( ..... )
2. The colour of the soil is green due to the presence of humus. ( ..... )
3. When a parachutist open his parachute air resistance decreases. ( ..... )

**2. [A] Choose the correct answer :**

1. The friction force between rough surfaces is ..... that between smooth surfaces.
  - a. larger than
  - b. less than
  - c. similar to
2. .... keep the body temperature constant.
  - a. Urine
  - b. Blood
  - c. Smoking
3. Urine is stored inside the .....
  - a. kidney.
  - b. urinary bladder.
  - c. ureter.
4. When the surface area of the moving object increases, the friction force .....
  - a. decreases.
  - b. increases.
  - c. doesn't change.

**[B] Give reasons for :**

1. Fish have streamline shape.

2. Roots are important for soil.

3. Sweat has salty taste.

**[C] Write two importance (advantages) of friction.**

1. ....
2. ....



## Final Examinations

## 3. [A] Write the scientific term :

1. A type of friction force as an object move through water. ( ..... )
2. A thin non-compacted superficial layer which covers the Earth's crust. ( ..... )
3. A yellow watery fluid in which blood cells are suspended. ( ..... )
4. The cells that have no nuclei. ( ..... )

## [B] Mention one function of :

1. White blood cells.  
.....
2. Ureters.  
.....
3. Blood platelets.  
.....

## [C] How can you keep the circulatory system healthy ? (two point only) :

1. ....
2. ....

## 4. [A] Compare between Arteries and Veins :

Points of comparison	Arteries	Veins
1. Thickness :	① .....	③ .....
2. Function :	② .....	④ .....

## [B] What happens when ... ?

1. There is no valve between atrium and ventricle.  
.....
2. Increase the friction force between the internal parts of machine.  
.....

## [C] Put (✓) or (x) and correct the wrong sentences if they are wrong :

1. The leaves of plants is important for preventing soil erosion. ( )  
.....
2. Air resistance decreases when the car moves so fast. ( )  
.....



3. Soil is composed of two layers only. ( )

4. The upper chamber of the heart is called atrium. ( )

### Additional questions

[A] Give a reason for :

Sand soil is named by this name.

[B] Put (✓) or (x) :

1. Wheat plant grows in sand soil. ( )

2. The spaces between the particles of clay soil are large . ( )

## 18 Port Said Governorate

Science Inspectorate

Answer the following questions :

1. [A] Complete the following statements :

- ..... force between two surfaces in contact, that acts in direction ..... to the direction of motion.
- A yellow watery fluid in which blood cells float .....
- Rocks break down when exposed to heat, ..... and .....
- ..... is connected to the kidney and transfers ..... to the bladder.
- Materials produced from breaking down of digested food inside body cells are .....

[B] Mention one function of the following :

1. Earthworms :

2. Valve in heart :

2. [A] Write the scientific term :

1. A thin non-compacted layer covers the Earth's crust. ( )

2. The smallest blood vessels that have thin walls. ( )



## Final Examinations

3. A force between water and the moving object through. ( ..... )
4. A blood vessel carries blood to the two kidneys. ( ..... )
5. A muscular organ, which pumps blood to all body parts. ( ..... )
6. System clarifies blood from excess salts, urea and uric acid. ( ..... )

**[B] What happens when ... ?**

1. Falling the leaves and other parts of plants on the soil.
- .....
2. Increasing the friction force between the internal parts of machines.

**3. [A] Choose the correct answer :**

- Eating food contains much amount of fats ..... the human.  
a. harm                      b. benefit                      c. not effect
- The cars and aeroplanes are designed with streamline shapes, ..... friction.  
a. decreases                      b. increases                      c. constant
- Humus increases in ..... of soil.  
a. top layer                      b. rocky layer                      c. lower layer
- Sweat glands found in .....  
a. kidneys.                      b. ureters.                      c. skin.

**[B] Compare between Arteries and Veins according to the function :**

Point of comparison	Arteries	Veins
Function :	<p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p>

**4. [A] Correct the underlined words in each of the following :**

1. The body gets rid of carbon dioxide and water vapour through kidneys. ( ..... )
2. The relationship between the area of the object surface and the air resistance of its movement is an inverse relation. ( ..... )
3. The two lower chambers of the heart are atria. ( ..... )



[B] Choose from column (A) what suits in column (B) :

(A)	(B)
1. Red blood cells	a. carry oxygen gas and carbon dioxide gas.
2. White blood cells	b. carry digested food and wastes materials.
3. Blood platelets	c. attack the microbes.
	d. form blood clot that heal wound and prevent bleeding.

1. ....

2. ....

3. ....

[C] Give reasons for :

1. Roots of plants are important for the soil.

2. The bat stretches its wings on landing.

#### Additional questions

[A] Put (✓) or (x) :

1. Cactus plant is seen in sand soil.

( )

2. The particles of clay soil are loose.

( )

[B] Give a reason for :

The silt soil has the medium drainage of water.

#### 19 Kafr El-Sheikh Governorate

Science Inspectorate

Answer the following questions :

1. [A] Choose the correct answer :

1. .... carry urine from kidneys to urinary bladder.

a. Atria

b. Urethra

c. Ureters

2. .... blood cells carry oxygen from lungs to body cells.

a. Red

b. White

c. Platelet

3. .... dig tunnels in the soil.

a. Plants

b. Earthworms

c. Fishes



## Final Examinations

**[B] Correct the underlined word in these statements :**

1. Aorta carries blood to the lungs. ( ..... )
2. Water resistance is a friction force as an object moves through air. ( ..... )
3. Kidneys stores urine until it is released outside the body through the urethra. ( ..... )

**2. [A] Choose from column (B) which suits in column (A) :**

(A)	(B)
1. Pulmonary veins return blood from lungs to	a. depending on friction.
2. Human urinary system is located in	b. plasma.
3. All blood cells float in	c. the left atrium.
4. Car brakes slow or stop the car	d. the cavity of the abdomen near the backbone.

1. .... 2. .... 3. .... 4. ....

**[B] Give reasons for each of the following :**

1. We must drink appropriate quantities of clean water daily.

.....

2. Ships fishes and dolphins have streamlined shapes.

.....

**3. [A] Write the scientific term :**

1. The decayed organisms mixed in soil component and add nutrients to soil. ( ..... )
2. Special glands in the skin through which the body gets rid of excess salts. ( ..... )
3. A hollow muscular organ that pumps blood continuously to all body parts. ( ..... )
4. A force resisting the motion of a moving object causing it to slow down and stop. ( ..... )

**[B] Complete the following statement :**

Some ..... make their homes in soil, while plants need ..... and other nutrients in the soil to live and grow.



4. [A] Mark (✓) in front of the correct statement and (x) in front of the wrong one :

1. Running around several times decrease the rate of your heartbeats. ( )
2. Air resistance to the car motion increases as its speed decreases. ( )
3. Bleeding stop when the body is wounded because blood platelets coagulate. ( )
4. Plants and animals take nutrients from the soil and add nutrients to it. ( )

[B] What could be happened in the following cases :

1. There is no enough friction between your feet and the floor.

.....

2. You keep exercising.

.....

#### Additional questions

[A] Put (✓) or (x) :

1. Wheat plant grows in sand soil. ( )
2. The spaces between the particles of clay soil are large . ( )

[B] Give a reason for :

The silt soil has the highest fertility.

.....

20

Fayoum Governorate

Science Supervision  
for Governmental Language School

Answer the following questions :

1. Complete the following statements :

1. The friction force between the water and the object that moves through is called .....
2. .... blood cells attack the microbes that cause diseases to human.
3. There is a ..... between atrium and ventricle on each side of the heart.
4. The kidney excretes the wastes dissolved in water in the form of .....
5. The main soil components are mud, ..... and .....



## Final Examinations

## 2. [A] Correct the underlined words in the following statements :

1. Sand is decayed organisms mixed in soil component. ( ..... )
2. The aorta delivers blood to the lungs. ( ..... )
3. The moving car is affected by air resistance in the same direction of its movement. ( ..... )
4. Ureter is a tube that extends from the bladder to open outside of the body. ( ..... )

## [B] What is function of ... ?

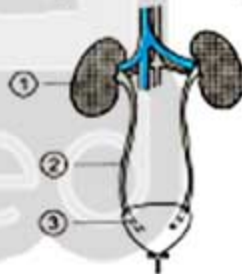
1. blood platelets.  
.....
2. The urinary bladder.  
.....

## 3. [A] Write the scientific term for each of the following statements :

1. The two lower chambers of the heart. ( ..... )
2. A thin loose layer covering the Earth crust. ( ..... )
3. A force that arises between two surfaces when one of them slides over the other. ( ..... )

## [B] Label the figure :

- ① .....
- ② .....
- ③ .....



## 4. [A] Give reasons for :

1. Blood capillaries have thin walls.  
.....
2. Sweat has a salty taste.  
.....

## [B] Choose the correct answer to complete the following statements :

1. The heart is a muscular pump in a size of your .....  
a. fingers.                      b. foot.                      c. fist.
2. Carbon dioxide and water vapour are released by the .....  
a. kidneys.                      b. lungs.                      c. heart.



3. When the surface area of moving object increases, the air resistance .....  
 a. increases.                      b. decreases.                      c. doesn't change.
4. .... help soil to be cohesive.  
 a. Ants                      b. Roots of plants                      c. Leaves of plants

### Additional questions

**[A] Choose the correct answer :**

1. The soil that has the fastest drainage of water and the lowest absorption of water is the .....  

a. sand soil.

b. clay soil.

c. silt soil.
2. .... soil absorbs water very well.  

a. Sand

b. Silt

c. Clay

**[B] Give a reason for :**

The silt soil has the highest fertility.

## 21

## El-Menia Governorate

Deinmwas Official School for Languages

**Answer the following questions :**

**1. Choose the correct answer :**

- ..... are small sized cell fragments that forming blood clot.  
**a.** White blood cells                      **b.** Blood platelets                      **c.** Red blood cells
- The friction force between water and the object that moves through is called .....  
**a.** water resistance.                      **b.** air resistance.                      **c.** movement.
- ..... is from the advantages of friction.  
**a.** Wasting money                      **b.** Damaging machine parts  
**c.** Lighting up a match
- The blood vessels that emerge from the heart are called .....  
**a.** veins.                      **b.** arteries.                      **c.** blood capillaries.
- The ..... are the most important organs of the urinary system.  
**a.** two kidneys                      **b.** two ureters                      **c.** veins
- The soil contains gravels produced from the breaking down of .....  
**a.** proteins.                      **b.** rocks.                      **c.** fats.



## Final Examinations

## 2. Put (✓) or (x) :

- Friction force causes a rise in the temperature of the machine parts. ( )
- There are valves within the heart cavity. ( )
- Nitrogenous wastes are removed by the urinary system. ( )
- The soil is the thin loose superficial layer of Earth's crust. ( )
- Air resistance is considered as a type of friction that hinders the motion of the objects. ( )
- Ureter is a tube that extends from the bladder to open outside the body. ( )

## 3. [A] Correct the underlined words :

- The value of friction between two surfaces depend on the colour of materials of both surfaces. ( ..... )
- The two lower chambers of the heart are called atria. ( ..... )
- Rocks add nutrients to the soil. ( ..... )
- Car brakes that are used to slow down or stop the car depend on movement force. ( ..... )

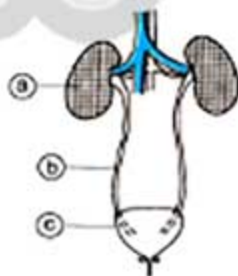
## [B] Give reasons for :

- The two sides of the heart are separated.  
.....
- Roots are important for the soil.  
.....

## 4. [A] Look at the figure and answer :

- The figure represent .....
- Label the figure :

- (a) .....  
(b) .....  
(c) .....



## [B] What happens when ... ?

- There is no valves inside the heart.  
.....
- Parachutist opens his parachute in landing.  
.....



## Additional questions

## [A] Give a reason for :

- The silt soil is the most suitable soil for cultivation.

## [B] Put (✓) or (x) :

1. The sand soil is strongly compact has poor ventilation and fertile. ( )
2. The colour of sand soil is black while that of the clay soil is grey. ( )

22

Assuit Governorate

Administration of Gover. Language Schools

Answer the following questions :

## 1. Complete the following sentences :

1. .... blood cells attack the microbes that cause diseases to human.
2. The force of .... acts in the opposite direction of an object's motion.
3. The tube, which extends from the bladder and opens outside the body is called .....
4. The soil contains gravels produced from breaking down of .....
5. The body get rid of nitrogenous wastes through ....., while it gets rid of carbon dioxide through .....

## 2. [A] Put (✓) or (x) in front of each statement and correct the wrong one :

1. There are valves within the heart cavity. ( )
2. Eating meals rich in fats and salts activate the circulatory system. ( )
3. Kidney filters excess water and salts from the human's food. ( )
4. When the parachutist opens his parachute, the air resistance decreases. ( )
5. Air and water are from the components of soil. ( )



## Final Examinations

[B] State the function of each of the following :

1. The ureter :

.....

2. The wall in heart :

.....

3. [A] Write the scientific term :

1. Friction force between water and the moving object through it. ( ..... )

2. The decayed remains of living organisms that exists in the soil. ( ..... )

3. The fluid which the kidneys produces and contains harmful substance. ( ..... )

[B] Give reasons for :

1. Skin is one of the excretory organs.

.....

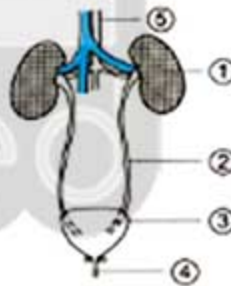
2. Roots are important for the soil.

.....

4. [A] The figure represents the .....

[B] Label the figure :

- ① .....  
 ② .....  
 ③ .....  
 ④ .....  
 ⑤ .....



### Additional questions

[A] Complete the following sentences :

1. The main types of soil are ..... and .....  
 2. .... soil absorbs water very well.

[B] Give a reason for :

The good aeration of the sand soil.

.....



Answer the following questions :

1. [A] Complete the following sentences :

1. From the factors affecting the friction force are ..... and .....
2. The circulatory system consists of ..... and blood vessels.
3. The body gets rid of carbon dioxide gas through ..... while nitrogenous wastes as urea and uric acid removed by .....
4. .... and ..... break down rocks into small pieces to form soil.

[B] Correct the underlined words :

1. Movement force slows down the moving object. ( ..... )
2. The arteries carry blood to heart. ( ..... )

2. [A] Write the scientific term :

1. Friction force between air and the moving object. ( ..... )
2. The system that clarifies blood from excess salts, urea and uric acid. ( ..... )
3. A thin non-compacted superficial layer covers the Earth's crust. ( ..... )
4. Decayed remains of animals and plants mixed with the soil and its colour is dark brown or black. ( ..... )

[B] What are the disadvantages of friction force ?

.....  
.....

3. [A] Put (✓) or (x) in front of each statement and correct the wrong one :

1. The friction force is necessary for lighting a match. ( )  
.....
2. Nitrogenous wastes are produced from breaking down of proteins. ( )  
.....
3. You must eat balanced food contains much salt. ( )  
.....



## Final Examinations

## [B] Give reasons for :

1. The fish has a streamline shape.

.....

2. Heart contains valves.

.....

3. Sweat has salty taste.

.....

## 4. [A] Choose the correct answer :

1. There is a ..... between the two sides of the heart to prevent mixing of blood in both sides.

a. atrium

b. valve

c. wall

2. .... is responsible for storing urine temporarily.

a. Urethra

b. Ureter

c. Urinary bladder

3. .... of plants protect the soil from erosion.

a. Roots

b. Leaves

c. Flower

## [B] Match from (B) what suits in (A) :

(A)	(B)
1. Red blood cells	a. defend the body against microbes.
2. Blood platelets	b. form blood clot.
3. White blood cells	c. carry oxygen.
	d. carry food and carry wastes.

1. ....

2. ....

3. ....

## Additional questions

## [A] Put (✓) or (x) :

1. Wheat plant grows in sand soil.

( )

2. The spaces between the particles of clay soil are large .

( )

## [B] Give a reason for :

The clay soil is poorly aerated.

.....



## 24 Luxor Governorate

## Science Inspectorate

Answer the following questions :

1. Complete the following sentences :

- Each side of the heart contains ..... chambers.
- The urinary system is located inside the ..... cavity.
- ..... prevents the soil erosion from happening quickly.
- The effect of friction force is in the ..... direction of the object's movement.

2. Write the scientific term :

- It is the friction force between the air and the moving object through it. ( ..... )
- A thin loose layer covering the Earth's crust. ( ..... )
- A yellow watery fluid in which blood cells float. ( ..... )
- The tube that carries urine from kidney to urinary bladder. ( ..... )
- The decayed remains of living organisms in the soil. ( ..... )
- The blood cells that have no nuclei. ( ..... )

3. Choose the correct answer :

- By decreasing the speed of the ship through water, water resistance .....  
a. decreases.                      b. increases.                      c. doesn't change.
- Carbon dioxide and water vapour are released by the .....  
a. heart.                              b. kidney.                              c. lungs.
- Soil erosion occurs by the effect of .....  
a. winds.                              b. running water.                      c. both of them.
- The heart is an organ in the size of your .....  
a. foot.                                  b. finger.                                  c. fist.
- The colour of soil is black or brown due to the presence of .....  
a. sand.                                  b. humus.                                  c. silt.
- It is the tube that extends from the urinary bladder and opens outside the body .....  
a. ureter.                                  b. urethra.                                  c. kidney.

4. [A] Put (✓) in front of right statements, and (x) in front of wrong statements :

- White blood cells defend the body against microbes. ( )
- Keeping the urine benefits urinary bladder. ( )



## Final Examinations

3. Earthworms is useful for the soil. ( )
4. Air resistance increases by decreasing surface area. ( )

**[B] Give reasons for :**

1. Modern cars have streamline shapes.
- .....

2. The presence of a wall between the two sides of the heart.
- .....

**Additional questions****[A] Choose the correct answer :**

1. The soil that has the fastest drainage of water and lowest absorption of water is the .....
- a. sand soil.                      b. clay soil.                      c. silt soil.
2. .... soil absorbs water very well.
- a. Sand                      b. Silt                      c. Clay

**[B] Give a reason for :**

The sand soil is less fertile.

.....

**25 South Sinai Governorate**

Tur Sinai Educational Directorate

Answer the following questions :

**1. [A] Complete the following sentences by one of these words :**

(Roots – kidneys – Blood platelets – Artery – friction – leaves)

- ..... help in formation of blood clot and prevent bleeding.
- ..... are the main organs of the urinary system.
- ..... fixed the plant in the soil.
- The ..... force affects in an opposite direction of the movement.
- ..... is a blood vessel that carry the blood from the heart to all body parts.

**[B] Mention the ways to keep the circulatory system healthy. (One point only)**

.....



**2. [A] Write the scientific term :**

1. A thin non-compacted layer covers the Earth's crust. ( ..... )
2. A muscular hollow organ that pump the blood to all body parts. ( ..... )
3. A friction force between air and the moving object through. ( ..... )
4. A narrow tube that carry urine from the kidney to the urinary bladder. ( ..... )

[B] Join from (A) to (B) :

(A)	(B)
1. White blood cells 2. Plasma	a. A yellow watery fluid in which blood cells float. b. Defend the body against microbes. c. Carry oxygen.

1. ....

2. ....

**3. [A] Choose the correct answer :**

- The body get rid of excess salts through .....  
a. lung.  
b. liver.  
c. skin.
- From the component of the circulatory system .....  
a. stomach.  
b. blood capillaries.  
c. pharynx.
- The friction force ..... by increasing the surface area.  
a. decrease  
b. increase  
c. constant
- ..... is remains of the decayed organisms.  
a. Gravels  
b. Mud  
c. Humus

**[B] Give reasons for :**

1. The heart contains valves.
2. Man urinates less in summer than winter.

**4. [A] Put (✓) or (x) :**

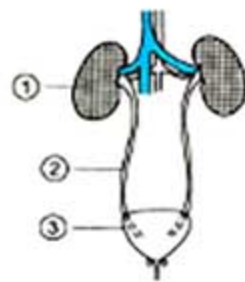
1. The friction force is necessary for walking. ( )
2. The heart contain two chambers. ( )
3. The streamline shape of the fish decrease the water resistance. ( )



## Final Examinations

[B] Label the figure :

- ① .....
- ② .....
- ③ .....



## Additional questions

[A] Mention three examples of plants that grow in the clay, silt and sand soils.

.....

.....

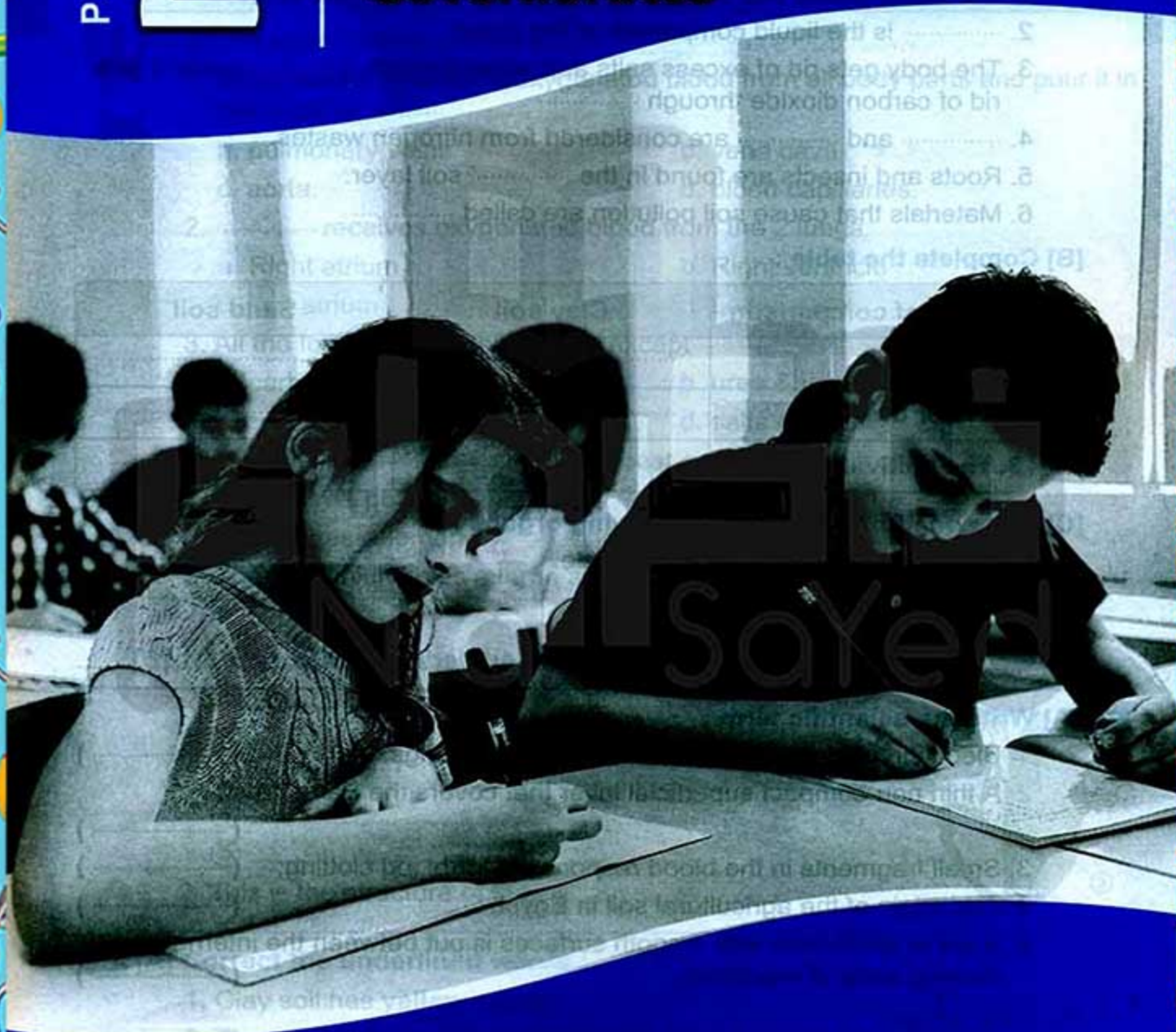
.....

[B] Put (✓) or (x) :

1. The sand soil is strongly compact, has poor ventilation and fertile. ( )
2. Wheat, potatoes and cactus grow in sand soil. ( )

RaNia SaYed



PART  
2Final Exams of Some Schools  
Governorates

\*Some exams questions have been modified  
according to the ministry modifications for the second  
term 2016-2017



Answer the following questions :

1 [A] Complete the following statements :

1. The blood vessel that carries deoxygenated blood to the lungs is .....
2. .... is the liquid component of the blood.
3. The body gets rid of excess salts and water through ....., while it gets rid of carbon dioxide through .....
4. .... and .... are considered from nitrogen wastes.
5. Roots and insects are found in the ..... soil layer.
6. Materials that cause soil pollution are called .....

[B] Complete the table :

Points of comparison	Clay soil	Sand soil
1. Aeration	.....	.....
2. Water drainage	.....	.....
3. The cultivated plants	.....	.....

[C] Write one function for the following organs :

1. Valves between atrium and ventricle.

2. Ureters in the urinary system.

2 [A] Write the scientific term :

1. Blood circulation between the heart and the lungs. (.....)
2. A thin non-compact superficial layer that covers the Earth crust. (.....)
3. Small fragments in the blood responsible for blood clotting. (.....)
4. The origin of the agricultural soil in Egypt. (.....)
5. A set of small balls with smooth surfaces is put between the internal moving parts of machines. (.....)

[B] Give reason :

1. Bat stretches its wings on landing.



## 2. Industrial wastes have many bad effects.

=====

**3. We must avoid eating food containing a lot of salts.**

=====

**3 [A] Choose the correct answer :**

1. Blood vessel collects deoxygenated blood from all body parts and pour it in the heart is .....

- a. pulmonary veins.      b. vena cava.  
c. aorta.      d. blood capillaries.

2. .... receives oxygenated blood from the 2 lungs.

- a. Right atrium  
b. Right ventricle  
c. Left atrium  
d. Left ventricle

3. All the following are cell wastes except .....

- a. carbon dioxide.      b. urea & uric acid.  
c. solid wastes.      d. salts & water.

4. .... and .... are plants best cultivated in silt soil.

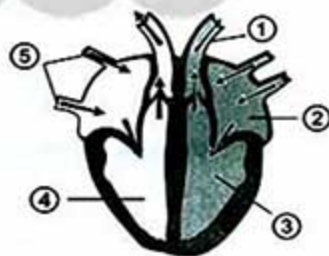
- a. Cotton & potatoes  
b. Rice & cotton  
c. Oranges & lemon  
d. Lemon & rice

5. The soil which holds a large amount of water is ..... soil.

- a. sand      b. clay      c. silt

**[B] 1. Complete and label the diagram :**

- ①
- ②
- ③
- ④
- ⑤



**2. This is the structure of the .....**

**4 [A] Correct the underlined words :**

1. Clay soil has **yellow** colour. ( ..... )

2. The decayed remains of plants and dead animals are called **silt**.

3. Air resistance **decreases** when then car moves so fast. ( ..... )



4. The ureter is a tube that extends outside the body where the urine is expelled out. (.....)
5. Pulmonary artery transfers oxygenated blood to all body parts. (.....)

**[B] What will happen in the following cases ... ?**

1. The 2 sides of the heart are not separated.  
.....
2. The kidneys in the human body are not working.  
.....
3. Absence of friction between car tires and the road.  
.....

2

Cairo Governorate

Own Heliopolis Language School

**Answer the following questions :**

**1 [A] Complete the following statements:**

1. .... carry urine from kidneys to urinary bladder, while .... carries urine from urinary bladder to outside.
2. Holding water in clay soil is ....., while in sand soil is .....
3. .... and .... break down rocks into small pieces.
4. .... and .... are the factors affecting water resistance and air resistance.

**[B] Write the scientific term :**

1. A type of blood vessels carry blood from heart to all body parts. (.....)
2. The superficial (outer) layer that covers the Earth's crust. (.....)
3. One of the blood components that attack microbes. (.....)
4. It is any change in the soil that disturbs its natural balance and harms its living organisms. (.....)

**2 [A] Choose the correct answer :**

1. The origin of soil in Egypt is the ..... plateau.  
a. Indian                                      b. Ethiopian                                      c. Mokatam
2. Urine is stored inside .....  
a. kidney.                                      b. urinary bladder.                                      c. ureter.



3. When the surface area of a moving object increases, the friction force .....
- a. increases.                      b. decreases.                      c. doesn't change.
4. Aorta artery carries blood rich in .....
- a. argon.                      b. carbon dioxide.                      c. oxygen.

**[B] Correct the underlined words :**

1. The aeration of clay soil is high. ( ..... )
2. Stems hold (fix) the plant in the soil. ( ..... )
3. Plasma help in coagulating (formation of clots) of blood. ( ..... )
4. The heart is the most important organ in the urinary system. ( ..... )

**3** [A] Put (✓) or (✗) :

1. Humus is the decayed organisms mixed with soil components. ( )
2. The Amazon river formed the soil in Egypt. ( )
3. The rate of heart beats increases when we run. ( )
4. The drainage (passing) of water in silt soil is fast. ( )
5. The wall in the heart allows (permits) mixing of blood between the two sides. ( )
6. Lubricants and oil are used to decrease friction force. ( )

**[B] Give reasons :**

1. Avoid the overuse of chemical fertilizers.
- .....
2. Sweat has salty taste.

**4 [A] Choose from column (B) what suits it in column (A) :**

(A)	(B)
1- From clay soil plants	a- cactus
2- Right ventricle	b- contains blood rich in oxygen
3- Left ventricle	c- rice
4- From sand soil plants	d- contains blood rich in carbon dioxide

1. .... 2. .... 3. .... 4. ....

**[B] Choose the odd (different) word :**

1. Kidney – heart – ureter – urinary bladder. ( ..... )



## Part

2.

2. orange – lemon – pomegranate – sugar cane. ( ..... )
3. Red blood cells – plasma – white blood cells – aorta artery. ( ..... )
4. Right atrium – left atrium – right ventricle – red blood cells. ( ..... )

**3**

## Cairo Governorate

Manor House International Schools

**Answer the following questions :**

**1** Complete the following sentences:

1. The heart consists of ..... chambers and ..... sides.
2. .... and ..... of plants decay forming .....
3. The skin gets rid of excess salts and water in the form of .....
4. The blood circulation between heart and lungs is called .....
5. .... soil is suitable for cultivation of cactus and potatoes.
6. Friction force increases between ..... surfaces, while it ..... between smooth surface
7. The kidney excretes the wastes dissolved in water in the form of .....
8. Soil is composed of different layers which are ....., ..... and .....
9. The urinary system consists of ....., ..... and urinary bladder.

**2** Write the scientific term :

1. Cells that carry oxygen and carbon dioxide. ( ..... )
2. A layer of soil that contains roots of plants, leaves of plants and micro organisms. ( ..... )
3. A yellow water fluid in which the blood cells float. ( ..... )
4. The type of glands that get rid of excess salts and water. ( ..... )
5. It's the decayed remains of animals and plants that mixed with the soil. ( ..... )
6. A force that helps us in walking and running. ( ..... )
7. A narrow tube extends from the kidney to the urinary bladder. ( ..... )
8. The indigested food that stored in the large intestine until it passes out of the body. ( ..... )

**3 [A] Choose the correct answer :**

- The size of particles of the clay soil is .....  
a. large.                      b. small.                      c. medium.
- Urea is expelled by the .....  
a. heart.                      b. kidney.                      c. lungs.



3. .... are blood components that attack microbes.  
 a. Red blood cells      b. White blood cells      c. Platelets
4. All the following are from sources of pollution of agricultural soil except .....  
 a. chemical pesticides.      b. natural fertilizers.      c. industrial wastes.

**[B] Write the function of :**

1. Red blood cells.  
 .....

2. Urinary bladder.  
 .....

3. Plasma.  
 .....

4. Ball bearings.  
 .....

**4 [A] Give reasons for :**

1. The colour of soil is dark brown.  
 .....

2. Modern cars have streamline shapes.  
 .....

**[B] What happens when ... ?**

1. Cultivating some bean seeds in high salinity soil.  
 .....

2. The human body can't get rid of its wastes.  
 .....

3. Smoking cigarettes.  
 .....

4

Cairo Governorate

Nasr City Zone  
Science Inspectorate

**Answer the following questions :**

**1 [A] Complete the following statements :**

1. The sweat glands get rid of excess salt and water in form of .....
2. .... blood cells carry oxygen and carbon dioxide inside the body.
3. .... is the blood vessel that transfers blood from heart to all body parts.
4. The colour of .... soil is dark.



## Part 2

## [B] Give reason :

1. There is a valve between each atrium and ventricle.

2. The silt soil fertility is the highest.

## 2 [A] Choose the correct answer :

1. .... are used to eradicate pests of agricultural crops.

a. Chemical fertilizers

b. Industrial wastes

c. Chemical pesticides

2. .... is the watery part of the blood.

a. Red blood cells

b. Plasma

c. White blood cells

3. .... is a tube that extends from urinary bladder and open outside body.

a. Urethra

b. Kidney

c. Ureters

4. The heart is a muscular pump in a size of your .....

a. fingers.

b. foot.

c. fist.

5. Urea and uric acid produced from breaking down of .....

a. salts.

b. proteins.

c. carbohydrates.

6. The two kidneys are ..... shaped organs.

a. round

b. rod

c. bean

## [B] Mention one function :

1. White blood cells.

2. Lubricants and oil.

## 3 [A] Write the scientific term :

1. The friction force between air and the moving object through it. ( ..... )

2. Blood circulation between heart and the two lungs. ( ..... )

3. The lower 2 chambers of the heart. ( ..... )

4. A balloon sac like that receives urine from the 2 ureters. ( ..... )

5. The artery that carries blood rich in carbon dioxide gas. ( ..... )

6. The small bodies that play a role in blood coagulation when the body is wounded. ( ..... )

## [B] Put (✓) or (x) :

1. Cactus plants are seen in sand soil. ( )

2. Increasing the periods between the irrigation times leads to increase the fertility of soil. ( )



## 4 [A] Correct the underlined word :

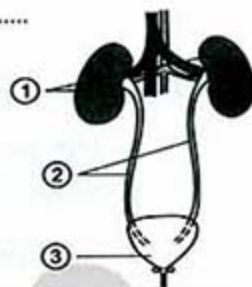
- The 2 kidneys are 2 narrow tubes that carry urine from the kidneys to the urinary bladder. (.....)
- The heart consists of three chambers. (.....)
- The friction force is always in the same direction of the movement of the object. (.....)
- The water drains easily in the clay soil. (.....)

## [B] Look at the opposite figure :

1. The name of the system is .....

2. Labels :

- .....
- .....
- .....



5

Cairo Governorate

St. George's College

Answer the following questions :

## 1 Complete the following statements :

- blood component are red blood cells, ....., blood platelets and .....
- We can cultivate ..... and ..... in the clay soil.
- The friction force between water and the object that moves through is called .....
- ..... are the main organs of urinary system.
- ..... and ..... are considered from soil pollutants.
- There is ..... between the atrium and ventricle in the heart.
- The colour of ..... soil is dark, while that of ..... soil is yellow.
- ..... keeps body temperature constant.

## 2 [A] Choose the correct answer :

- The origin of the agricultural soil in Egypt is from the ..... plateau.  
a. Tibet                      b. Golan                      c. Ethiopian
- The heart is a muscular pump in a size of your .....  
a. finger.                      b. fist.                      c. foot.



## Part 2

3. Carbon dioxide and water vapour are released by the .....  
 a. kidneys.                      b. lungs.                      c. heart.
4. The growth of ..... is preferred in sand soil.  
 a. peanut plant                      b. cotton                      c. wheat

**[B] Give reason for the following sentences :**

1. Blood capillaries have a thin wall.  
 .....

2. A fish has a streamline shape.  
 .....

**3 [A] Put (✓) or (x) :**

1. The particles of clay soil is large. ( )
2. Red blood cells attack the microbes that cause diseases to human. ( )
3. Nitrogen wastes are removed by the skin. ( )
4. Eating food rich in fats activates the circulatory system. ( )
5. Sand soil is good aerated. ( )
6. Compactness of silt soil is medium. ( )

**[B] What happens if ... ?**

The level of ground water rises.  
 .....  
 .....

**4 Write the scientific terms :**

1. The two lower chambers of the heart. ( ..... )
2. A thin non compacted layer covering the Earth crust. ( ..... )
3. A yellow watery fluid in which blood cells float. ( ..... )
4. The remains of the decayed organisms. ( ..... )

**6 Cairo Governorate**

New Cairo directorate  
 Alkhayatn Egyptian Language School

**Answer the following questions :****1 Complete :**

1. When living organisms die, they decay forming .....
2. .... and .... are used to decrease the friction force.



## Final Exams

3. Rockets and ..... are designed in ..... shape to decrease air resistance.
4. Water and ..... breaks down rocks into small pieces to form soil.
5. The urinary system filters the blood from ..... , ..... and excess salts.
6. The effect of the friction force is in the ..... direction of movement.
7. The colour of the ..... soil is yellow, while that of the ..... soil is dark.
8. The circulatory system transports ..... and ..... to all body cells.
9. From the disadvantage of friction is .....
10. Earth worm digs tunnels in the soil to allow ..... and ..... to pass through.

## 2 [A] Put (✓) or (x) :

1. Friction force between rough surfaces is larger than that between smooth surfaces. ( )
2. The heart consists of two chambers and four sides. ( )
3. By increasing the speed of the bicycle, air resistance decreases. ( )
4. Silt soil is very fertile. ( )

## [B] Choose the correct answer :

1. The blood is liquid due to the presence of .....  
a. plasma.                      b. red blood cells.                      c. platelets.
2. Carbon dioxide is released by .....  
a. kidney.                      b. heart.                      c. lungs.
3. The left ventricle pumps the blood to .....  
a. aorta.                      b. vena cava.                      c. pulmonary veins.
4. The good aeration is one of the properties of ..... soil.  
a. silt                      b. clay                      c. sand

## 3 [A] Write the scientific term :

1. The organ which stores the urine temporally. ( ..... )
2. A thin non-compact loose layer which covers the Earth crust . ( ..... )
3. Tiny blood vessels that connects ends of the arteries and beginnings of veins. ( ..... )
4. The friction force between water and the object that moves through it. ( ..... )
5. The blood circulation between the heart and the lungs. ( ..... )



## Part 2

[B] Match :

(A)	(B)
1- Sand soil	a- Cotton
2- Silt soil	b- Potatoes
3- Clay soil	c- Lemon

1. ....

2. ....

3. ....

4 [A] Give reasons for :

1. Birds stretch their wings on landing.

2. Roots are very important for the plants.

3. Sweat has a salty taste.

4. There is a wall between the two sides of the heart.

[B] Mention the function of :

1. White blood cells :

2. Kidney :

3. Ball bearings :

4. Platelets :

## 7 Cairo Governorate

El-Gomhouria Language School

Answer the following questions :

1 Complete the following sentences :

- The main soil components are sand, ..... and .....
- The oxygenated blood (rich in oxygen) return to the heart through ..... to enter .....
- The ureters carry ..... from the kidneys to the .....
- Cactus grows in ..... soil, while cotton grows in ..... soil.

2 [A] Write the scientific term :

- The blood cells that have no nuclei and carry oxygen gas. ( .....



## Final Exams

2. The fluid produced by the kidneys and contains harmful substances. (.....)
3. It is the loose superficial layer that covers the Earth's crust. (.....)
4. Blood circulation between the heart and all body parts except the two lungs. (.....)

**[B] What happens in case of ... ?**

1. Running for 6 minutes with respect to heart beats.  
.....
2. Acidic rains fall on the soil.  
.....

**3 [A] Choose the correct answer :**

1. .... keeps body temperature constant.  
a. Urine                      b. Blood                      c. Smoking
2. Don't keep urine for a long time to maintain the ..... system.  
a. respiratory              b. circulatory              c. urinary
3. One of the blood components which attack microbes .....  
a. red blood cells.              b. white blood cells.              c. blood platelets.
4. The aeration of sand soil is .....  
a. bad.                      b. good.                      c. medium.
5. Air resistance for a moving bicycle depends on .....  
a. the speed of the bicycle.  
b. the surface area of the bicycle.  
c. (a) and (b).

**[B] Write the function of each of the following :**

1. The blood platelets.  
.....
2. Earthworms to the soil.  
.....
3. Ball bearings.  
.....

**4 [A] Correct the underlined words :**

1. The aorta delivers blood to the lungs. (.....)
2. The spaces between the particles of clay soil are large. (.....)
3. The kidneys have apple shape. (.....)



## Part 2

4. The colour of the soil is green due to presence of humus. ( ..... )  
 5. There is a wall in the heart between atrium and ventricle. ( ..... )

**[B] Give reasons for :**

1. The two sides of heart are separated.  
 .....

2. Parachutist opens the parachute on landing.  
 .....

3. Irrigating the agricultural lands regularly.  
 .....

8

Giza Governorate

Egyptian International School

**Answer the following questions :****1 [A] Complete the following :**

1. The blood flows inside a network of pipelines called .....  
 2. .... is connected with the kidney and carries the urine into .....  
 3. Increasing the speed of a car causes the increase of ..... resistance and increase of consumption of .....  
 4. Pulmonary artery carries ..... blood, while pulmonary veins carry ..... blood.  
 5. .... soil is moderately compacted while ..... soil is weakly compacted.  
 6. .... atrium receives blood from all body parts except the lungs.

**[B] What is the meant by ... ?**

1. Soil pollution.  
 .....

2. Air resistance.  
 .....

**2 Choose the correct answer :**

1. .... are the materials that the body must get rid of them.  
 a. Poisonous excretory materials  
 b. Fats  
 c. Proteins  
 2. .... receives the oxygenated blood from lungs.  
 a. Right atrium  
 b. Left atrium  
 c. Left ventricle  
 3. The excess salts are expelled outside the body through .....  
 a. urinary system.  
 b. skin.  
 c. (a) and (b).



4. .... coagulate blood when the body is wounded.  
 a. Red blood cells      b. White blood cells      c. Blood platelets
5. When you shake a mixture of soil and water, then leave it for 10 minutes, ..... settles down.  
 a. silt      b. clay      c. gravel
6. The artery in the urinary system carries .....  
 a. pure blood.      b. blood containing wastes.  
 c. blood rich in carbon dioxide.
7. urea and uric are produced from breaking down of .....  
 a. proteins.      b. fats.      c. carbohydrates.
8. The loose upper layer that covers Earth crust is called .....  
 a. soil.      b. humus.      c. silt.

### 3 [A] Give the scientific term :

- The lower two chambers of the heart. (.....)
- The two organs that clarify the body cell wastes and harmful substances. (.....)
- Blood circulation between the heart and all the body parts except the two lungs. (.....)
- A soil rarely contains humus. (.....)
- A yellow watery fluid in which blood cells float. (.....)
- A force acts in the opposite direction to the movement force. (.....)

### [B] Give reason :

- The presence of grooves and channels in car tires.  
 .....
- The water level in the clay soil is higher than the water level in both sand and silt soils.  
 .....

### 4 [A] Tick (✓) in front of true sentence, and tick (✗) in front of wrong sentence and correct if it is wrong :

- Red blood cells are responsible for defending the body against microbes. ( )  
 Correct : .....
- The aorta delivers deoxygenated blood to lungs. ( )  
 Correct : .....



## Part 2

3. There are valves within the heart cavity. ( )  
Correct : .....
4. The tube which extends from the urinary bladder and opens outside the body is called ureter. ( )  
Correct : .....
5. Eating meals rich in fats and salts activate the circulatory system. ( )  
Correct : .....
6. The clay soil is poorly aerated. ( )  
Correct : .....

**[B] What happens if ... ?**

1. Man uses chemical pesticides in great amount in agricultural soil.  
.....
2. The two sides of the heart are not separated from each other.  
.....

9

**Giza Governorate**Omrania Directorate  
Al Neel Lang. School**Answer the following questions :****1 Complete the following :**

1. The blood flows from the atrium to ..... through the .....
2. The arteries transport the blood from ..... to .....
3. Kidneys are located on both sides of the .....
4. .... and ..... are used to decrease friction between moving parts of machines.
5. The particles of silt soil are ..... in size.

**2 [A] Give reason for :**

1. Blood capillaries have thin walls.  
.....
2. Rockets and aircrafts have streamline shapes.  
.....
3. The two sides of the heart are separated.  
.....

**[B] Put (✓) or (x) :**

1. Chemical fertilizers must be used instead of natural fertilizers to protect soil from pollution. ( )
2. Earthworm and insects live in the top layer of soil. ( )



## Final Exams

3. The particles size of clay soil are large. ( )
4. Eating food rich in fats keep circulatory system healthy. ( )
5. The aorta delivers blood to the lungs. ( )

## 3 Write the scientific term :

1. The artery that carries blood rich in carbon dioxide. ( .....
2. Small bodies that play an important role in blood coagulation. ( .....
3. The type of glands that get rid of excess salts and water through skin. ( .....
4. The remains of the decayed organisms. ( .....
5. The thin non-compacted layer that covers the Earth crust. ( .....
6. The friction force resulting from the movement of an object through water. ( .....
7. A type of soil that has yellow colour. ( .....
8. The liquid produced by the kidneys and contains harmful substance. ( .....

## 4 [A] Mention the function of :

1. Plasma :  
.....
2. The kidney :  
.....
3. Lubricants and oil :  
.....

## [B] Choose the correct answer :

1. Carbon dioxide and water vapour are released by the .....  
a. kidneys.                      b. lungs.                      c. heart.
2. The heart is a muscular pump in a size of your .....  
a. fingers.                      b. foot.                      c. fist.
3. All the following are from the ways to protect soil from pollution except .....  
a. recycling of agricultural wastes to useful materials.  
b. improving the drainage of agricultural land.  
c. using chemical fertilizers instead of natural fertilizers.
4. Rice grows efficiently in ..... soil.  
a. clay                      b. silt                      c. sand
5. The origin of the soil of Egypt is the rocks of the ..... plateau.  
a. Red sea.                      b. Ethiopian.                      c. Himalaya.



10

## Giza Governorate

Boulaq El Dakroul Directorate  
Dar El-Hanan Language School

Answer the following questions :

1 [A] Complete the following statements by using the following words :

(silt – kidneys – sand – pulmonary artery – clay)

1. The soil types are ..... and .....
2. All arteries carry blood rich in oxygen except .....
3. .... are the main organs of the urinary system.

[B] What's the function of ... ?

1. Urinary bladder :

2. Red blood cells :

3. Roots of the plant :

2 [A] Correct the underlined words :

1. The spaces between the particles of clay soil are large. (.....)
2. There is a wall in heart between atrium and ventricle. (.....)
3. Keeping the urine and not getting rid of it benefit the urinary bladder. (.....)
4. Parachutist opens his parachute to decrease air resistance. (.....)

[B] Give reason :

1. Smoking must be avoided.
2. Damage of the internal parts of machines.

3 [A] Join from column (A) with the suitable in column (B) :

A	B
1- Silt soil	a- Defend the body against microbes
2- Clay soil	b- Receives deoxygenated blood from vena cava
3- Sand soil	c- Dark colour
4- Right atrium	d- Rich in humus
5- White blood cells	e- Fast drainage of water

1. ....
2. ....
3. ....
4. ....
5. ....



[B] The figure represents the three type of blood vessels :

- ① .....  
 ② .....  
 ③ .....



4 [A] Write the scientific term :

- One of the blood components that help in the blood clot. ( ..... )
- The two organs that clarifies the body from the nitrogenous wastes and harmful substances. ( ..... )
- A force which is necessary for lighting a match. ( ..... )

[B] What happens if ... ?

- Absence of friction between your shoes and the road.  
 .....
- We depend on natural enemies of insects instead of chemical pesticides.  
 .....

[C] Give one example for the plants that grow in :

- Clay soil : .....
- Silt soil : .....
- Sand soil : .....

11

Giza Governorate

6<sup>th</sup> October Directorate  
Delta Language Schools

Answer the following questions :

1 [A] Complete the following :

- ..... cells attack microbes.
- Blood vessels come from heart are called .....
- ..... connected to kidney and carry urine to urinary bladder.
- ..... is the highest fertile soil.
- The friction force between air and the object that moves through is called .....

[B] Write the function of :

- Heart : .....
- Kidney : .....
- Roots of plant for plant : .....



## Part 2

## 2 [A] Choose the correct answer :

- ..... begins with thin wall blood vessels.  
a. Artery                      b. Vein                      c. Blood
- Pulmonary artery carries blood from .....  
a. right atrium.              b. right ventricle.              c. kidney.
- Air resistance increases when .....  
a. the car velocity decreases.              b. the car velocity increases.  
c. the car doesn't move.
- Skin secrete excess salts and water in form of .....  
a. Urine.                      b. sweat.                      c. blood.
- Sand soil aeration is .....  
a. weak.                      b. good.                      c. medium.

## [B] Write how can you keep your circulatory system healthy ? Write 3 only

.....

.....

.....

## 3 [A] Put (✓) or (✗) and correct the wrong one :

- Nitrogenous materials like urea and uric acid. ( )
- Pulmonary veins carry blood rich in carbon dioxide. ( )
- There are 5 layers for soil. ( )
- Formation of Egypt soil from the Ethiopian plateau. ( )
- Carbon dioxide comes out of body through two kidneys. ( )

## [B] Write two cultivated plants in each soil (sand, silt, clay) :

.....

.....

.....

## 4 [A] Write scientific term for each :

- The force that slows down the moving object and its effect is in the opposite direction of the object movement. (.....)
- Balloon like sac organ store urine in it. (.....)
- Thin non compacted layer covers Earth crust. (.....)



## Final Exams

4. The yellow watery fluid in blood. ( ..... )  
 5. Blood circulation between heart and lungs. ( ..... )

**[B] Give reason for each :**

1. Presence of valves in heart.  
 .....  
 2. Establishing factories in places far from the agricultural areas.  
 .....  
 3. Earthworms are very important to the soil.  
 .....

**12****Alexandria Governorate****Central Zone Science Inspection****Answer the following questions :****1 [A] Complete the following statements :**

1. The atria receive blood through ....., while ventricles push blood into .....  
 2. Blood platelets form ..... which help in healing wounds.  
 3. The urinary system is located inside the ..... cavity.  
 4. The most important soil pollutants are ....., ..... and .....  
 5. The drainage of sand soil is ....., while that of clay soil is .....

**[B] What happens if ... ?**

1. There are no grooves or channels in car tires.  
 .....  
 2. There is no valve between each atrium and ventricle.  
 .....

**2 [A] Choose the correct answer :**

1. .... is responsible for storing urine temporarily.  
 a. Ureters                      b. Kidney                      c. Urinary bladder  
 2. Carbon dioxide and water vapour are released by the .....  
 a. kidney.                      b. lungs.                      c. heart.  
 3. Rockets and aircrafts have streamline shapes to .....  
 a. increase air resistance.                      b. increase water resistance.  
 c. decrease air resistance.



## Part

## 2

4. The growth of ..... is preferred in sand soil.  
a. peanut plant      b. cotton      c. wheat
5. The artery in the urinary system carries .....  
a. pure blood.      b. blood rich in carbon dioxide.  
c. blood with waste materials.
6. The rate of heart beats is ..... during exercises.  
a. increased      b. constant      c. decreased

**[B] Give one reason for each of the following :**

1. You mustn't urinate or wash in irrigation canals.  
.....
2. Lubricants and oil are used in mechanical machines.  
.....

**3 [A] Correct the underlined words :**

1. Silt soil is the most suitable for cultivation of cotton. ( ..... )
2. Urine passes outside the body from urinary bladder through ureters. ( ..... )
3. The pulmonary veins carry blood rich in carbon dioxide. ( ..... )
4. Red blood cells defend the body against microbes. ( ..... )
5. The origin of the soil of Egypt is the Sudan plateau. ( ..... )
6. The colour of sand soil is black, while that of clay is grey. ( ..... )

**[B] What is meant by ... ?**

1. Soil pollution.  
.....
2. Minor blood circulation.  
.....

**4 [A] Write down the scientific term for each of the following :**

1. The narrow tube which connects kidney with urinary bladder. ( ..... )
2. A blood vessel that carries the purified blood from the kidney. ( ..... )
3. The undigested food stored in it, till expelling it out the body. ( ..... )
4. A layer of soil contains roots of plants, microorganisms and humus. ( ..... )
5. The artery that carries blood rich in oxygen to all parts of the body. ( ..... )
6. The force that opposes the movement direction of the parachutist. ( ..... )



[B] Look at the opposite figure then answer :

Arrange the different types of soil discendingly according to ..... ?

1. The size of paricles

.....  
.....

2. Compactness

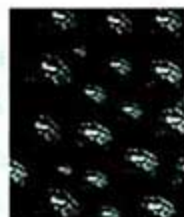
.....  
.....



Clay soil



Silt soil



Sand soil

13

Alexandria Governorate

Borg El-Arab Educational  
Directorate

Answer the following questions :

1 Complete the following :

1. Circulatory system transports ....., ..... and water to all the body cells.
2. Blood platelets form ....., which help in healing .....
3. The most suitable soil for cultivation is ..... soil because it is highly fertile.
4. Kidneys are located on both sides of the .....
5. The heart consists of ..... chambers.
6. The effect of the friction force is in the ..... direction of the object's movement.

2 [A] Write the scientific term :

1. The cells that have no nuclei. (.....)
2. Blood circulation between the heart and the two lungs. (.....)
3. The fluid which is excreted by kidneys. (.....)
4. The remains of the decayed organisms. (.....)

[B] What is the function of ... ?

1. Red blood cells :

.....

2. Lubricants and oil in machines :

.....

3 [A] Choose the correct answer :

1. .... carry the blood to the heart.

a. Veins

b. Platelets

c. Arteries



## Part 2

- All the following are from the sources of pollution of agricultural soil except .....  
 a. chemical pesticides.      b. industrial wastes.      c. natural fertilizers.
- Carbon dioxide and water vapour are released by the .....  
 a. kidneys.      b. lungs.      c. heart.
- Blood components which attack the microbes .....  
 a. white blood cells.      b. blood platelets.      c. red blood cells.

## [B] Give reasons :

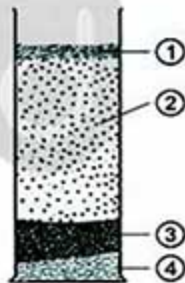
- Bat stretches its wings on landing :  
 .....
- Heart contains valves.  
 .....

## 4 [A] Put (✓) or (✗) :

- White blood cells defend the body against microbes. ( )
- Eating food rich in fats activates the circulatory system. ( )
- The two lower chambers of the heart are called ventricles. ( )
- Nitrogen wastes are removed by the skin. ( )
- The urinary bladder stores sweat until it is released from the body. ( )
- Friction prevents us from slipping down during walking. ( )

## [B] Label the figure :

- .....
- .....
- .....
- .....



## 14 Alexandria Governorate

Al Agamy Zone  
Science Supervision

Answer the following questions :

## 1 [A] Complete the following :

- Vessels that carry blood to the heart are called .....
- The main types of soil are ....., silt and .....
- Urine consists of water containing excess salts, ..... and .....
- ..... are formed when the industrial wastes dissolve in rain water.



**[B] Give a reason :**

1. Man urinates less in summer than winter.

.....

2. Fish has streamline shapes.

.....

**2 [A] Put (✓) or (x) :**

1. There are valves within the heart cavity. ( )
2. Cactus plants are seen in clay soil. ( )
3. Ureter is a tube that extends from the bladder to open outside the body. ( )
4. White blood cells defend the body against microbes. ( )
5. The colour of sand soil is dark. ( )

**[B] Mention one function :**

1. Aorta :

.....

2. Lubricants and oil in machines :

.....

**3 [A] Choose the correct answer :**

1. The particles size of clay soil is .....  
a. large.                      b. small.                      c. medium.
2. The heart is a muscular pump in a size of your .....  
a. finger.                      b. foot.                      c. fist.
3. .... is a balloon like bag that stores urine.  
a. Ureter                      b. Urethra                      c. Urinary bladder
4. Blood vessels which carry blood from the heart are the .....  
a. arteries.                      b. veins.                      c. blood capillaries.
5. .... is a thin non-compacted layer covers the Earth's crust.  
a. Sand                      b. Soil                      c. Humus

**[B] What will happen when ... ?**

1. The two sides of the heart are not separated.

.....

2. Cultivating the bean seeds in high salinity soil.

.....



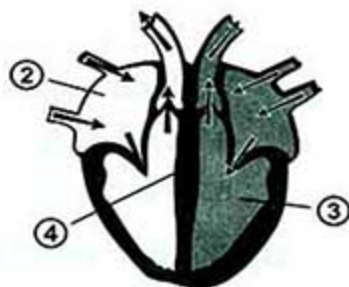
## Part 2

## 4 [A] Mention the scientific term :

1. The cells that have no nuclei. (.....)
2. The narrow tube which connects to the kidney and urine passes through it. (.....)
3. The decayed remains of organisms that increase soil fertility. (.....)
4. The friction force between air and the moving objects through it. (.....)

## [B] Label the following figure :

1. This figure represents .....
2. ....
3. ....
4. ....



## 15 Qaliubya Governorate

## Resala Language School

## Answer the following questions :

## 1 [A] Complete the following sentences :

1. The value of ..... between two surfaces depends on the type of material of both surfaces.
2. .... soil contains more humus, while ..... soil contains rarely humus.
3. The colour of ..... soil is dark, while that of ..... soil is yellow.
4. The main types of soil are ....., ..... and .....

## [B] Write the scientific term :

1. A thin non-compacted layer that covers the Earth's crust. (.....)
2. The type of glands that get rid of excess salts and excess water through skin. (.....)
3. Chemical compounds used to eradicate pests of agricultural crops. (.....)
4. The two organs which excrete carbon dioxide and excess water in the form of water vapour. (.....)
5. The bean shaped organs which are located on both sides of the backbone. (.....)



**2 Give reasons for :**

1. Friction force depends on the type of surface material.

.....

2. The clay soil has poor aeration.

.....

3. Man urinates less in summer than winter.

.....

4. The skin is one of the excretory organs.

.....

**3 Put (✓) or (x) and correct the wrong ones :**

1. Humus is a yellow material. ( )

Correct : .....

2. Solid wastes are materials from food that your body cannot digest. ( )

Correct : .....

3. Cactus plants are seen in the sand soil. ( )

Correct : .....

4. The origin of the soil of Egypt is the Sudan plateau. ( )

Correct : .....

5. Plants that produce tubers as potatoes and sweet potatoes are grown in silt soil. ( )

Correct : .....

6. The well aerated soil has non-compacted particles. ( )

Correct : .....

**4 [A] Choose the correct answer :**

1. .... are connected to the kidney.

a. Ureters.

b. Kidneys.

c. Urethra.

2. .... soil is the fast in drainage of water.

a. Clay

b. Silt

c. Sand

3. All the following plants are preferred to be grown in clay soil except .....

a. cotton.

b. rice.

c. peanut.

4. To decrease the friction force, we must use .....

a. lubricants and oil.

b. ball bearings.

c. (a) and (b).

5. Rice grows efficiently in .... soil.

a. clay

b. silt

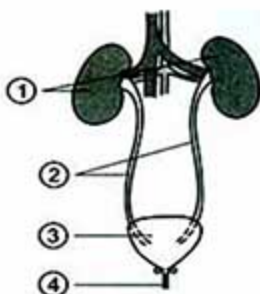
c. sand



## Part 2

[B] Label the opposite diagram :

- ① .....  
 ② .....  
 ③ .....  
 ④ .....



16

Sharkia Governorate

Science Inspectorate

Answer the following questions :

1 Complete the following sentences :

1. Urea and uric acid are produced from breaking down of .....
2. .... blood cells has no nuclei.
3. .... are used to eradicate pests of the agricultural crops.
4. The colour of .... soil is black (dark).
5. Circulatory system consists of ..... and .....
6. .... is the most aerated soil.

2 [A] Write the scientific term :

1. Thin non-compacted upper layer which covers the Earth's crust. ( ..... )
2. Blood circulation between the heart and lungs. ( ..... )
3. The decayed remains of living organisms that exist in the soil. ( ..... )
4. The artery that carries oxygenated blood to all parts of the body. ( ..... )
5. Tiny blood vessels connect between the ends of arteries and the beginnings of veins. ( ..... )

[B] Give reason :

1. The car movement needs friction force.  
 .....
2. The wall of the left ventricle is more thicker than that the right ventricle.  
 .....

3 [A] Choose the correct answer :

1. .... plant is suitable to be cultivated in the sand soil.  
 a. Wheat                      b. Rice                      c. Potatoes



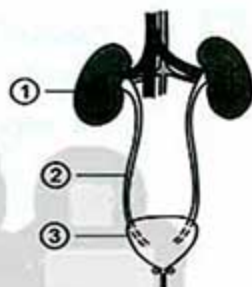
2. Blood vessels which carry blood from the heart are called .....  
a. veins.                      b. arteries.                      c. blood capillaries.
3. .... attack microbes that enter the body.  
a. Red blood cells              b. Plasma                      c. White blood cells

**[B] Correct the underlined words :**

1. Heart consists of two chambers. ( ..... )
2. The skin helps the body to get rid of urine. ( ..... )
3. Ball bearings are used to increase the friction force. ( ..... )
4. Cotton plant grows in the silt soil. ( ..... )
5. **Lungs** are the main organs in the urinary system. ( ..... )

**4 [A] 1. Label the opposite diagram :**

- ① .....
- ② .....
- ③ .....



2. This figure is ..... system.

**[B] What happens if .... ?**

1. There's no valves in the heart.  
.....
2. The soil is irrigated irregularly.

17

## Menofia Governorate

Shebeen El-Koum  
Educational Directorate.

**Answer the following questions :**

**1** Complete the following sentences :

1. The ..... is a muscular pump in a size of your .....
2. The presence of ..... and ..... in car tires reduce the effect of water in friction force.
3. .... is connected with the kidney and carries the urine into .....
4. The factors that break down rocks into small pieces are heat, ....., rains and running .....

**2 [A] Write the scientific term :**

1. The lower two chambers of the heart. ( ..... )
2. Thin loose upper layer which covers the Earth's crust. ( ..... )



## Part 2

3. Glands in the skin that get rid of excess salts and water. ( ..... )
4. The suitable soil for cultivation of rice, cotton and wheat. ( ..... )
5. A type of friction force resulting from moving of an object through water. ( ..... )
6. The blood circulation between the heart and other parts of the body. ( ..... )

**[B] Mention one function of :**

- ### 1. The kidney.

- ## 2. The white blood cells.

**3 [A] Choose the correct answer :**

- The particles of the sand soil is .....  
a. small.                      b. medium.                      c. large.
- ..... receives the oxygenated blood from lungs.  
a. Right atrium                      b. Left atrium                      c. Left ventricle
- The origin of the agricultural soil in Egypt is from ..... plateau.  
a. Tibet                      b. Golan                      c. Ethiopian
- All the following keep circulatory system healthy except .....  
a. exercises.                      b. balanced food.                      c. smoking.
- Plant leaves that fall on the soil help in the formation of .....  
a. gravel.                      b. clay.                      c. humus.
- Carbon dioxide and water vapour are released by the .....  
a. heart.                      b. lungs.                      c. kidneys.

**[B] What happens when .... ?**

1. The left ventricle contracts.

2. Moving cars with high speed on a wet road.

**4 [A] Give reasons for :**

1. The silt soil has the highest fertility.

- ## 2. Avoid the overuse of chemical fertilizers.



[B] Put (✓) or (✗) :

1. Platelets is the watery part of the blood. ( )
2. Rocky soil layers contain roots, animals and humus. ( )
3. Blood enters the kidneys through arteries. ( )
4. The pulmonary veins carry blood rich in oxygen. ( )
5. The two kidneys are located on both sides of the heart. ( )

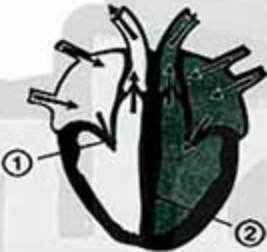
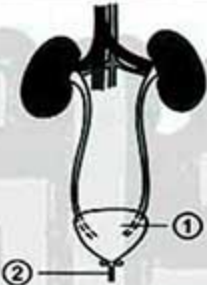
18

Dakahlia Governorate

Educational Directorate

Answer the following questions :

1 [A] Complete the following table :

	
<p>a) This organ belongs to the ..... system.</p> <p>b) Write the labels.</p> <p>① .....</p> <p>② .....</p> <p>c) Mention the importance of part number ②.</p> <p>.....</p> <p>.....</p>	<p>d) Name the system.</p> <p>.....</p> <p>e) Write the labels.</p> <p>① .....</p> <p>② .....</p> <p>f) Mention the importance of part ①.</p> <p>.....</p> <p>.....</p>

[B] Mention the function of each of the following :

1. The root for the plant.

.....

2. Lubricants and oil in machines.

.....



**2 [A] Complete the following sentences :**

1. The upper chambers of the heart are called ....., while the lower chambers are called .....
2. Pulmonary veins carry oxygenated blood from ..... to the .....
3. Ball bearings are designed to reduce the friction force, because they contain ..... balls that have ..... surfaces.
4. Cactus plant grows in ..... soil, while cotton grows in ..... soil.

**[B] Put (✓) or (x) :**

1. Eating diet rich in fats activates the circulatory system. ( )
2. Red blood cells defend the body against microbes. ( )
3. Silt soil is highly fertile. ( )
4. Factories should be built beside agricultural lands. ( )

**3 [A] Write the scientific term :**

1. The blood circulation between the heart and lungs. (.....)
2. A yellow watery fluid in which blood cells float. (.....)
3. Blood vessels that connect the ends of arteries and beginnings of veins. (.....)
4. Thin loose upper layer that covers the Earth's crust. (.....)
5. The decayed remains of living organisms that increase soil fertility. (.....)

**[B] Give reasons :**

1. Blood flows from atrium to ventricle in one direction and doesn't return back.  
.....
2. Birds bodies have streamline shapes.  
.....
3. Two kidneys are the most important organs in urinary system.  
.....

**4 [A] What happens if ... ?**

1. There are no blood platelets in the blood.  
.....
2. The level of ground water rises.  
.....
3. The temperature of the internal moving parts of machines increases.  
.....



[B] Mention how to keep the circulatory system healthy ? (2 points only)

[C] Complete the next table :

Points of comparing	Sand soil	Silt soil
Size of particles	.....	.....
Colour	.....	.....
Aeration	.....	.....

19

Gharbia Governorate

Central Science Supervision

Answer the following questions :

1 [A] Complete the following :

- Types of soil are different according to ..... and ..... of soil.
- ..... and ..... are the factors that affect air resistance.
- The nitrogenous wastes are ..... and .....
- The main components of soil are sand, ..... and .....
- The heart is located within ..... cavity between .....

[B] Give reason for each of the following :

- Bat stretches its wings on landing.  
.....
- The skin is one of the excretory organs.  
.....
- The clay soil is poorly aerated.  
.....

2 [A] Write the scientific term for each of the following :

- The process of getting rid of the excretory materials out of the body. (.....)
- The decayed remains of living organisms that exist in the soil. (.....)
- The network of pipelines that extend all over the human body. (.....)
- The soil that composed of a mixture of equal amounts of gravel, sand, clay and silt, but it contains more humus. (.....)
- A type of friction force resulting from moving of a body through water. (.....)



## Part 2

[B] Write the function of each of the following :

1. White blood cells :

2. The two kidneys :

3. Ball bearings :

3 [A] Choose the correct answer in each of the following :

1. The silt soil compactness is .....

- a. strong.                      b. weak.                      c. medium.                      d. very strong.

2. .... keeps the temperature of the body constant.

- a. Blood                      b. Food                      c. Air                      d. Water

3. The origin of the agricultural soil in Egypt is the ..... plateau.

- a. Tibet                      b. Golan                      c. Ethiopian                      d. Red sea

4. The urinary system expels the nitrogenous wastes in the form of .....

- a. urine.                      b. sweat.                      c. blood.                      d. plasma.

5. All the following are from the sources of pollution of agricultural soil except .....

- a. chemical pesticides.                      b. increasing soil salinity.  
c. natural fertilizers.                      d. industrial wastes.

[B] What happens when ... ?

1. Increasing the surface area of the moving object.

2. There aren't microorganisms in the soil.

3. The human body keeps urine for a long period of time.

4 [A] Correct the underlined words :

1. The clay soil has the fastest and greatest drainage of water. ( ..... )2. The solid wastes stored in the small intestine until it passes out the body. ( ..... )3. The oxygenated blood returns to heart through superior vena cava. ( ..... )



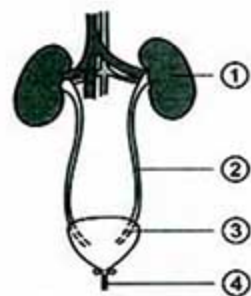
## Final Exams

4. A lot of creatures exist in **rocky** layers of the soil. ( ..... )  
 5. Air resistance **decreases** when the car moves so fast. ( ..... )

[B] Look at the opposite figure, then answer the following :

1. What is the figure represents ? .....  
 2. Write the labels.

- ① .....  
 ② .....  
 ③ .....  
 ④ .....



20

Ismailia Governorate

Science Inspectorate

Answer the following questions :

1 [A] Look at the opposite figure then answer :

1. Label the figure :

- ① .....  
 ② .....  
 ③ .....

2. Write the function of number ②.

3. The wall of the room number ③ is more thicker than the other rooms (Give reason).



[B] Compare between :

Points	Sand soil	Clay soil
Size of particles :	.....	.....
Colour :	.....	.....
Compactness :	.....	.....

2 [A] Write the scientific term :

1. The main organ in urinary system. ( ..... )  
 2. Rains formed when the industrial wastes dissolve in rain water. ( ..... )  
 3. A thin non-compacted layer that cover the Earth crust. ( ..... )



## Part 2

## [B] What happen when ... ?

1. You keep urine for long time.

.....

2. Absence of friction between car tires and the road.

.....

## [C] Give reason for :

1. Skin is one of the excretory organs.

.....

2. Fish have streamline shaps.

.....

## 3 [A] Complete the following :

1. .... , ..... and clay are from the soil components.

2. .... is connected with the kidney and carries the urine into the .....

3. Circulatory system consists of .... , ..... and blood vessels.

## [B] Mention one example of plants grow in the following soils :

1. Clay soil. (.....)

2. Silt soil. (.....)

3. Sand soil. (.....)

## [C] Give one function for :

1. Kidney :

.....

2. Valve :

.....

## 4 [A] Choose :

1. Carbon dioxide and water vapour are released by .....

a. kidney.      b. lungs.      c. heart      d. liver.

2. Modern cars are designed with streamline shapes to .....

a. increase air resistance.      b. decrease water resistance.  
c. be attractive.      d. decrease air resistance.

3. Solid wastes are indigested food which is stored in .....

a. lungs.      b. ureter.      c. large intestine.      d. blood.

4. All arteries carry blood rich in oxygen gas except .....

a. Aorta.      b. pulmonary artery.      c. veins.      d. plasma.



[B] Match :

A	B
1. Red blood cells.	a. help in healing wounds.
2. Plasma.	b. carry oxygen and carbon dioxide.
3. Blood platelets.	c. defend the body against microbes.
4. White blood cells.	d. carry digested food to the cells.

1. .... 2. .... 3. .... 4. ....

21

Port-Said Governorate

Lycee Al-Horreya School

Answer the following questions :

1 Complete the following sentences :

- ..... blood cells attack the microbes that cause diseases to human.
- ..... increases by increasing the surface area of a moving object.
- ..... are the main organs of the urinary system.
- The deoxygenated blood carries ..... gas, while the oxygenated blood carries ..... gas.
- Water, heat and ..... break down rocks into small pieces.
- The main types of soil are silt soil, ..... and .....

2 [A] Write the scientific term that expresses the following :

- The fluid which the kidneys produces and contains harmful substances. (.....)
- A set of small balls with smooth surfaces is put between the internal moving parts of machines. (.....)
- A yellow watery fluid in which blood cells float. (.....)
- A thin loose layer covering the Earth's crust. (.....)
- The remains of the decayed organisms. (.....)

[B] Give reasons :

- Irrigation the agricultural lands regularly.  
.....
- Heart contains valves.  
.....
- Blood capillaries have a thin wall.  
.....



## Part 2

## 3 [A] Choose the correct answer :

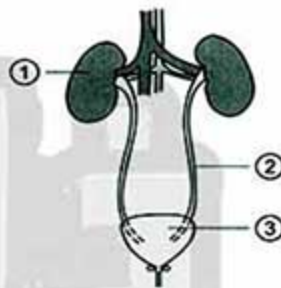
- Blood vessels which carry blood from the heart are the .....  
a. arteries.                      b. veins.                      c. blood capillaries.
- Carbon dioxide and water vapour are released by the .....  
a. kidneys.                      b. lungs.                      c. heart.
- The origin of the agricultural soil in Egypt is from the ..... plateau.  
a. Tibet                      b. Golan                      c. Ethiopian
- The particles size of clay soil is .....  
a. large.                      b. small.                      c. medium.

## [B] What are the soil different components ?

## 4 Look at the opposite diagram then answer :

- Name the shown diagram .....
- Label the diagram :

- .....
- .....
- .....



22

Damietta Governorate

Educational Directorate

Answer the following questions :

## 1 [A] Complete the following sentences :

- The urinary system filters the blood from excess salts, ..... and .....
- Soil is composed of sand, clay, water, ..... and .....
- The circulatory system transports ..... and water to all the body cells.
- The friction force between the air and the object that moves through is called .....
- All the arteries carry oxygen-rich blood except the ..... which carries blood containing plenty of carbon dioxide.

## [B] What would happen when ... ?

- There is no valve between atrium and ventricle of the heart.



2. The friction force equals the pushing force of an object.
- .....

**[C] Give one function for :**

1. The white blood cells.
- .....

2. The skin.
- .....

**2 [A] Write the scientific term for each of the following :**

1. It is any change in the soil that disturbs its natural balance. (.....)
2. The blood vessels that carry the blood from the two lungs to the left atrium. (.....)
3. Two narrow tubes that carry urine from the kidneys to the urinary bladder. (.....)
4. The blood circulation between the heart and other parts of the body. (.....)
5. A network of thin walled vessels that connect the arteries with veins around the body cells. (.....)

**[B] Give reasons for :**

1. The silt soil is highly fertile.
2. The fish has streamlined shape.
3. There is a wall between two sides of the heart.

**3 [A] Choose the correct answer :**

1. Carbon dioxide and water vapour are removed from the body by the .....  
a. kidneys.      b. lungs.      c. heart.      d. stomach.
2. The blood vessel that carries blood from the heart to all the body parts is .....  
a. pulmonary artery.      b. vena cave.      c. aorta.      d. lung veins.
3. Aeration of sand soil is .....  
a. good.      b. bad.      c. medium.      d. non.



4. From the blood components that help in blood clotting are .....  
 a. blood platelets.      b. red blood cells.  
 c. white blood cells.      d. veins.
5. To reduce friction force we use .....  
 a. lubricants.      b. oils.      c. ball bearing.      d. all the previous.

[B] Mention one example of plants that grow in the following soils :

1. Sand soil : .....  
 2. Silt soil : .....  
 3. Clay : .....

4 [A] Correct the underlined words :

1. Acidic rains are formed due to chemical pesticides. ( ..... )  
 2. The friction force is always in the same direction of the objects. ( ..... )  
 3. The leaves of plants take water and nutrients from the soil. ( ..... )  
 4. The pulmonary veins carry blood rich in carbon dioxide. ( ..... )  
 5. The vein in the urinary system carries blood containing wastes. ( ..... )  
 6. Adding chemical fertilizers decreases the soil pollution. ( ..... )

[B] Mention one way to protect the :

1. Urinary system : .....  
 2. Circulatory system : .....

23

El-Behiera Governorate

Science Inspectorate

Answer the following questions :

1 [A] Complete the following sentences :

1. Pulmonary artery carries ..... blood, while pulmonary vein carries ..... blood.  
 2. The main types of soils are ..... , ..... and .....  
 3. To avoid soil pollution, ..... fertilizers must be used instead of ..... fertilizers.  
 4. Water and ..... break down rocks to form soil.

[B] Choose the correct answer :

1. The growth of ..... is preferred in sand soil  
 a. peanut plant      b. cotton      c. rice      d. wheat



## Final Exams

2. Urea and uric acid are produced from breaking down of .....  
 a. proteins.                      b. fats.                      c. salts.                      d. carbohydrates.
3. Friction force acts in a direction ..... the direction of motion.  
 a. opposite to                      b. perpendicular to  
 c. parallel to                      d. is the same
4. Red blood cells carry .....  
 a. oxygen only.                      b. oxygen and carbon dioxide.  
 c. food.                      d. carbon dioxide only.

### 2 [A] What is meant by each of the following ... ?

1. Blood capillary : .....
2. Water resistance : .....

### [B] Give reasons for :

1. The water level in the clay soil is higher than the water level in sandy soil.  
 .....
2. Blood flows in one direction only inside the heart.  
 .....
3. Modern cars have streamline shapes.  
 .....
4. Man urinates in winter more than in summer.  
 .....

### 3 [A] Write the scientific term :

1. A thin loose layer covering the Earth's crust. (.....)
2. The organ which responsible for getting rid of the carbon dioxide. (.....)
3. The blood circulation between the heart and all body parts. (.....)
4. A yellow water fluid in which blood cells float. (.....)

### [B] What happens if ... ?

1. Absence of microorganisms from the soil.  
 .....
2. Moving cars with high speed on a wet road.  
 .....
3. Sweat glands disappeared from the skin.  
 .....
4. The two sides of the heart are not separated from each other.  
 .....



## 4 [A] Correct the underlined words :

1. The origin of the Egypt soil is the Sudan plateau. (.....)
2. The two kidneys are located on both sides of the heart. (.....)
3. The two atria are the two lower chambers of the heart. (.....)
4. Plasma defends the body against microbes. (.....)

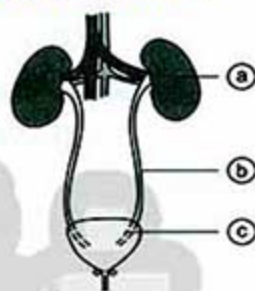
## [B] Mention one importance for each of the following :

1. The two kidneys :

2. Lubricants and oil in machines.

## [C] Look at the opposite figure and then answer the following questions :

1. What is the name of this system ? .....
2. Label the figure :  
 (a) ..... (b) ..... (c) .....
3. What is the importance of (c) ?  
 .....  
 .....



## 24 Fayoum Governorate

Governmental Language  
Schools Administration

## Answer the following questions :

## 1 Complete :

1. The circulatory system consists of ....., ..... and the blood vessels.
2. Clay soil keeps ..... water, while ..... soil keeps less water.
3. The urinary system is located in the ..... cavity near .....
4. The resistance of water is in a direction ..... to the direction of object's motion
5. Running water and ..... break down rocks into small pieces to form the soil.

## 2 [A] Choose the correct answer :

1. The heart is a muscular pump about the size of your .....  
 a. finger.      b. foot.      c. fist      d. head.
2. The origin of the agricultural soil in Egypt is from ..... plateau.  
 a. Tibet      b. Golan      c. Red sea      d. Ethiopian
3. The body gets rid of carbon dioxide gas through the .....  
 a. lungs.      b. kidneys.      c. skin.      d. heart.



4. To protect the soil from pollution we must rationalize the use of .....  
 a. chemical pesticides.                      b. chemical fertilizers.  
 c. natural fertilizers.                      d. (a) and (b).
5. Blood vessels which carry blood from different parts of the body to the heart are called the .....  
 a. arteries.                      b. veins.                      c. blood capillaries.                      d. valves.
6. Rice grows efficiently in ..... soil.  
 a. clay                      b. silt                      c. sand                      d. (a) and (c)

**[B] What is the function of ... ?**

1. Red blood cells.  
 .....

2. The urinary bladder.  
 .....

**3 [A] Write the scientific term :**

1. The remains of decayed organisms that exist in the soil. ( ..... )  
 2. Blood circulation between the heart and all the body parts except the two lungs. ( ..... )  
 3. A force acts in the opposite direction to the movement force. ( ..... )  
 4. The system which filters the blood from urea, uric acid, excess salts and excess water. ( ..... )

**[B] Match:**

A	B
1. White blood cells	a. receives blood rich in oxygen from the lungs.
2. The left atrium	b. attack microbes that cause diseases to human.
3. Clay soil	c. is well aerated.
4. Sand soil	d. is highly fertile.
	e. is highly compacted.

1. .... 2. .... 3. .... 4. ....

**4 [A] Put (✓) or (x) :**

1. The ureters are the most important organs of the urinary bladder. ( )  
 2. The silt soil contains more humus. ( )  
 3. All arteries carry blood rich in carbon dioxide except the pulmonary arteries. ( )  
 4. Roots fix the plant in the soil. ( )



5. Eating diets rich in fats and salts activate the circulatory system. ( )
6. Solid wastes are stored in the urinary bladder before passing out of the body. ( )

[B] Give reason :

1. Ball bearings are used in machines.  
.....
2. Man urinates less in summer than in winter.  
.....

25

Beni-Suef Governorate

Educational Directorate

Answer the following questions :

1 Complete the following :

1. The soil types are sand, ..... and .....
2. .... and ..... are used to decrease friction force between the internal moving parts in machines.
3. .... and ..... break down rocks into small pieces.
4. Blood consists of red blood cell, ....., ..... and blood platelets.

2 Write the scientific term :

1. A force enables us to control the car speed and change its direction. ( ..... )
2. A muscular organ, about the fist in size and located within the chest cavity. ( ..... )
3. Blood circulation between the heart and the two lungs. ( ..... )
4. The decayed remains of living organisms that exists in the soil. ( ..... )

3 Correct the underlined words :

1. Red blood cells defend the body against microbes. ( ..... )
2. The sand soil is strongly compacted and has poor aeration. ( ..... )
3. Air resistance decreases when a car moves so fast. ( ..... )
4. Ureter is a tube extends from the bladder to open outside of the body. ( ..... )

4 [A] Choose the correct answer :

1. The growth of ..... is preferred in the sand soil.
- a. peanut plant      b. cotton      c. vegetables



2. .... is the yellow watery fluid in the blood.
  - a. Plasma
  - b. Blood platelets
  - c. Red blood cell
3. The origin of the agricultural soil in Egypt is from ..... plateau.
  - a. Tibet
  - b. Golan
  - c. Ethiopian
4. The aeration of silt soil is .....
  - a. good.
  - b. bad.
  - c. medium.
5. Urea is expelled by the .....
  - a. heart.
  - b. kidneys.
  - c. lungs.

**[B] Give reason :**

1. Avoid the overuse of chemical fertilizers.  
.....
2. The two sides of the heart are separated.  
.....
3. Sweat has salty taste.  
.....

**26****Assuit Governorate****Garnal Abd Elnasser Language School****Answer the following questions :****1 [A] Give reason :**

1. The blood is in a liquid form.  
.....
2. Aorta is the largest artery in the body.  
.....
3. Birds stretch their wings on landing.  
.....
4. Humus is very important for soil.  
.....

**[B] What's the function of :**

1. Ball bearings.  
.....
2. Urinary bladder.  
.....

**2 [A] Write the scientific term :**

1. Thin loose layer which covers the Earth crust. (.....)
2. The main organ of urinary system. (.....)
3. The cells that have no nuclei. (.....)

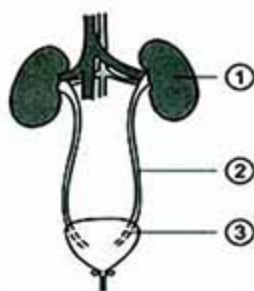


## Part 2

4. The lower two chambers in the heart. ( ..... )  
 5. Any change in the soil that disturbs its natural balance. ( ..... )

## [B] Label the opposite figure :

- ① .....  
 ② .....  
 ③ .....



## 3 [A] Choose the correct answer :

- Carbon dioxide and water vapour are released out of body by the .....  
 a. kidneys.                      b. heart.                      c. lungs.
- ..... soil contains a small amount of clay and silt and rarely contains humus.  
 a. Sand                      b. Clay                      c. Silt
- Which of the following plants grows in the clay soil ? .....  
 a. Cotton.                      b. Lemon.                      c. Cactus.
- ..... receives the oxygenated blood from lungs.  
 a. Right atrium                      b. Left atrium                      c. Left ventricle
- ..... is the narrow tube that allows urine to reach the urinary bladder.  
 a. Urethra                      b. Ureter                      c. Artery
- ..... is a special type of glands that produces sweat.  
 a. Sweat glands                      b. Liver                      c. Pancreas

## [B] Mention the difference between minor blood circulation and the major blood circulation :

.....  
 .....  
 .....

## 4 [A] Complete the following sentences :

- Heart consists of ..... chambers filled with .....
- The ..... are network of thin walled vessels that locate in tissue and around the cells.
- The ..... cells attack the microbes in the human body.
- From waste materials ..... and ..... which are produced from breaking down protein.
- The compactness in ..... soil is very weak, while that in ..... soil is very high.



[B] What's meant by ... ?

1. Air resistance : .....
2. Humus : .....
3. Blood platelets : .....

27

Sohag Governorate

Educational Directorate

Answer the following questions :

1 [A] Put (✓) or (x) :

1. The heart has four sides. ( )
2. Ball bearings increase the friction between moving parts in machines. ( )
3. Keeping the urine and delaying getting rid of it benefits the urinary system. ( )
4. Veins transport blood from heart to all the body cells. ( )

[B] Join from column (A) what suits in column (B) :

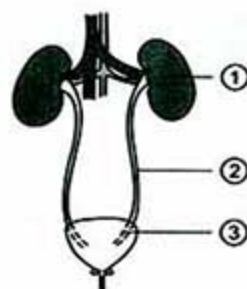
A	B
1. Red blood cells.	a. it is a watery fluid.
2. White blood cells.	b. coagulate blood.
3. Blood platelets.	c. carry oxygen gas from lungs to all body cells.
4. Plasma.	d. defend the body against microbes.

1. ....
2. ....
3. ....
4. ....

2 [A] 1. Label the figure :

- ① .....
- ② .....
- ③ .....

2. The figure represents the ..... system.



[B] Choose the correct answer :

1. The silt soil compactness is .....  
a. strong.                      b. weak.                      c. medium.
2. Urea is expelled by the .....  
a. heart.                      b. kidneys.                      c. lungs.



## Part

## 2.

3. Blood vessels which carry blood from the heart are the .....  
a. arteries.                                      b. veins.                                      c. blood capillaries.
4. The origin of the agricultural soil in Egypt is from ..... plateau.  
a. Tibet                                      b. Golan                                      c. Ethiopian

**3 [A] Write the scientific term :**

1. A thin loose layer covering the Earth's crust. ( ..... )
2. The blood circulation between the heart and all body parts except the two lungs. ( ..... )
3. Chemical compounds used to eradicate pests of agricultural crops. ( ..... )
4. The remains of the decayed organisms. ( ..... )

**[B] Give reasons for the following :**

1. Fish have streamline shapes.
- .....
2. The silt soil fertility is the highest.

**4 Complete the following :**

1. .... atrium receives blood from all body parts except the lungs.
2. The colour of .... soil is dark, while that of .... soil is yellow.
3. Urine consists of water containing excess salts, .... and .... acid.
4. From the components of soil are ...., .... and ....

28

## Luxor Governorate

Educational Directorate

**Answer the following questions :**

**1** Complete the following :

1. Vessels that carry the blood to the heart are called .....
2. .... is a main component of the environment.
3. Air resistance acts in ..... direction to the movement direction.
4. When the blood is exposed to the air, a blood ..... is formed.
5. .... is connected to the kidney and carry the urine into .....
6. .... and some ..... dig tunnels in the soil.

**2 [A] What happens in case of .... ?**

1. Running for 5 minutes with respect to heart beats.



## Final Exams

2. The human body keeps urine for a long period of time.

3. The soil is irrigated irregularly.

4. Eating foods containing a lot of salts.

**[B] Choose the odd word :**

1. Gravel / sand / wind / silt / water. ( ..... )
2. Kidneys / heart / ureters / urinary bladder. ( ..... )
3. The lungs / the heart / the blood / the blood vessels. ( ..... )
4. Urea / uric acid / carbon dioxide / excess salts. ( ..... )

**3 [A] Write the scientific term :**

1. The decaying organisms mixed in the soil component. ( ..... )
2. The plateau which the origin of the agricultural soil in Egypt is from it. ( ..... )
3. Blood components which are responsible for attacking the microbes causing diseases to man. ( ..... )
4. A type of force that is needed to walk and run. ( ..... )
5. The watery part of the blood. ( ..... )

**[B] Arrange the soil components from the lower part to the higher one :**

Sand / silt / humus / gravel / mud

..... / ..... / ..... / ..... / .....

**4 [A] Give reasons for :**

1. Blood capillaries have a thin wall.

2. Modern cars have streamline shapes.

**[B] How can you maintain your urinary system healthy ?**

1. ....
2. ....
3. ....
4. ....



## Part 2

## 29 South Sinai Governorate

Tur Sinai Directorate

Answer the following questions :

## 1 [A] Complete the following :

1. The ..... soil has the fast drainage of water.
2. .... atrium receives blood from all body parts except the lungs.
3. .... soil is well aerated, while ..... soil is poorly aerated.
4. .... and ..... affects water resistance and air resistance.

## [B] Give reasons :

1. Parachutist opens his parachute on landing.  
.....
2. Earthworms have a great importance to the soil and plants.  
.....

## 2 [A] Put (✓) or (x) then correct the wrong one :

1. The size of particles of sand soil is small. ( )  
.....
2. The two kidneys excrete the sweat from the blood. ( )  
.....
3. Sand soil has highly absorption of water. ( )  
.....
4. The plants that produce tubers grow well in sand soil. ( )  
.....
5. The two ureters are the most important organs in the urinary system. ( )  
.....

## [B] What happens in case of ... ?

1. The level of ground water rises up.  
.....
2. Running for 5 minutes with respect to heartbeats.  
.....

## [C] How can you maintain your urinary system health ? (two points only)

.....

.....



## 3 [A] Choose the correct answer :

- ..... soil is highly fertile.
  - Clay
  - Sand
  - Silt
- Carbon dioxide is released by the .....
  - skin.
  - lungs.
  - kidney.
- The rice grows efficiently in ..... soil.
  - clay
  - silt
  - sand
- The silt soil more suitable for cultivation of .....
  - cotton.
  - potatoes.
  - fruits.
- The system that filter the blood from excess salts, urea and uric acid ..... system.
  - urinary
  - digestive
  - circulatory

## [B] Write the function of :

- Lubricants and oil in machines.

- Valves in the heart.

## [C] Compare :

Points of comparison	Clay soil	Sand soil
Compactness	.....	.....

## 4 [A] Write the scientific term :

- A The soil that its color is grey. (.....)
- The blood circulation between the heart and two lungs. (.....)
- Any change in the soil that disturb its balance. (.....)
- The remains of the decayed organism. (.....)

## [B] Join from column (A) what the suitable in column (B) :

A	B
1. Red blood cells	a. it is a watery fluid.
2. White blood cells	b. coagulate blood.
3. Blood platelets	c. Carry oxygen to all body cells.
4. Plasma	d. Defend the body against microbes.

- .....
- .....
- .....
- .....



## Part 2

30

Red Sea Governorate

Science Supervision

Answer the following questions :

1 [A] Complete the following sentences :

1. From the main soil components are ..... and .....
2. Heart is composed of ..... chambers.
3. .... is connected with kidney and carries urine into .....
4. Urine consists of water, containing excess salts, ..... and .....
4. The colour of ..... soil is yellow.

[B] Give reasons :

1. The silt soil fertility is the highest.

2. The heart contains valves.

3. Avoid the overuse of chemical fertilizers.

2 [A] Put (✓) or (x) :

1. Eating meals rich in fats and salts activates circulatory system. ( )
2. The heart is located inside chest cavity. ( )
3. Carbon dioxide gas and water vapour are released by the lungs. ( )
4. Skin excretes the wastes dissolved in water in form of sweat. ( )
5. Clay soil has poor aeration. ( )
6. Rice grows efficiently in sand soil. ( )

[B] Mention the function of each the following :

1. Ball bearings.

2. White blood cell.

3 [A] Choose the correct answer :

1. The nitrogenous wastes are produced from breaking of .....  
a. fats.                      b. proteins.                      c. carbohydrates.
2. The heart is a muscular pump in a size of your .....  
a. fingers.                      b. foot.                      c. fist.



3. The pulmonary artery carries the blood from ..... to the lungs.  
a. right atrium      b. right vertical      c. left vertical
4. Blood components which are responsible for blood clotting process are .....  
a. red blood cells.      b. plasma.      c. blood platelets.
5. The origin of the agricultural soil in Egypt is from ..... plateau.  
a. Tibet      b. Golan      c. Ethiopian
6. The silt compactness is .....  
a. strong.      b. medium.      c. weak

[B] What's the importance of living organisms (earthworms) to the soil :

.....  
.....

4 [A] Write the scientific term :

1. A type of friction resulting from moving of an object through the air. ( ..... )
2. A yellow watery fluid in which blood cells float. ( ..... )
3. Blood circulation between the heart and the two lungs. ( ..... )
4. A thin non-compacted superficial layers that covers the Earth's crust. ( ..... )
5. The remains of decayed organisms. ( ..... )

[B] Compare between each the following :

Arteries	Veins
1. Carry blood from ..... to .....	1. Carry blood from ..... to .....
2. Carry blood rich in .....	2. Carry blood rich in .....



## Unit One

## Lesson 1

1. a. friction force 2. c. Friction force
3. a. opposite to
4. a. The friction force between the ball and the street is larger than that between the ball and the floor.
5. d. all the previous answers.
6. b. the friction force between the two bodies is smaller than the movement force.

7. d. (a), (b) and (c).

8. a. increases.

9. b. smaller than

10. d. (a) and (b).

11. a. increases

12. a. the friction force.

13. b. in the opposite direction.

14. b. the car velocity increases.

15. d. decrease air resistance.

16. d. (a) and (b).

17. a. a direct relation between them.

18. b. to decrease air resistance.

19. b. increases.

20. d. (a), (b) and (c).

21. c. water resistance.

22. b. decreases.

23. d. (a) and (b).

2. 1. (x) ... in the opposite direction ...

2. (✓)

3. (✓)

4. (x) ... is larger ...

5. (x) ... at the opposite direction.

6. (x) ... on the surface area of ...

7. (x) ... increases. 8. (✓)

9. (x) ... increases ... decreases ...

10. (x) ... depends on the type of the

materials surface, speed of the moving

object and the surface area ...

11. (✓)

12. (x) ... slowly.

13. (x) ... is a direct relation.

14. (✓)

15. (✓)

16. (x) ... increase air resistance.

17. (x) ... air resistance increases.

18. (x) ... can be observed.

19. (x) ... decreases water resistance.

20. (x) ... through air.

3. 1. Friction force.

2. Friction force.

3. Friction force.

4. Air resistance.

5. Air resistance.

6. Direct relation.

7. Water resistance.

8. Water resistance.

9. Water resistance.

4. 1. friction force

2. friction force.

3. opposite

4. the friction force.

5. a friction force

6. the friction - the movement

7. friction force.

8. the type of the material surface -

the surface area of the moving object

9. friction force

10. rough - decreases

11. friction force

12. air resistance.

13. opposite direction. 14. increases.

15. decreases.

16. trains - aircrafts - decrease air resistance.

17. streamline shape.

18. surface area - air resistance.

19. water resistance.

20. opposite.

21. water resistance.

22. water resistance.

23. Surface area of moving body - speed of

moving body

24. decrease water resistance.

25. water resistance

5. 1. Due to the effect of friction force that

arises when the toy car touches the floor.

2. Due to the increase in the friction force.

3. Because by increasing the surface area

of the moving object, the friction force

increases.

4. Because the friction force increases

between the rough surfaces and

decreases between the smooth surfaces.

5. Because the friction force increases

between the rough surfaces and

decreases between the smooth surfaces.

6. Because the friction decreases between

the smooth surfaces and increases

between the rough surfaces.

7. Because by increasing the speed of

the body, the air resistance increases

and vice versa.

8. To decrease the air resistance.

9. To decrease the air resistance.

10. To increase the air resistance by

increasing its surface area, so the falling

speed decreases.

11. To increase the air resistance by

increasing its surface area.

12. To decrease the water resistance.

13. Because the relation between the speed

and the water resistance is a direct

relation.

14. Because they act in the opposite

direction of the movement.

6. 1. The speed of the bike decreases gradually

until it stops due to the friction force.

2. The friction force increases.

3. The air resistance increases.

4. The water resistance increases.

7. \* It is a force that exists between two surfaces

when they touch each other and it affects in

the opposite direction of the movement.

\* The disadvantage of friction :

- Damage almost of machines and wasting

a lot of money.

\* The ways to decrease friction :

1. Using lubricants and oil.

2. Using ball bearings.

8. The folded paper reaches the ground first,

because the air resistance that opposes it

is smaller than that opposes the unfolded

paper.

9. 1. It is the force between two surfaces in

contact that acts in a direction opposite

to the direction of motion and causes

the object to slow down and stop.

2. It is a type of friction force resulting from

the movement of an object through air.

3. It is a type of friction force resulting from

the movement of an object through water.

10

Pushing force

Friction force

Friction force

11 Look at the main book on page (12).

## Times Questions

1 Because :

- In figure (1), the friction force is larger

than the movement force.

- In figure (2), the friction force is smaller

than the movement force.

2 1. Due to the effect of the friction force.

2. The friction force acts in the opposite

direction of the movement.

3

Air resistance	Water resistance
Fig. (b)	Fig. (a)
Fig. (c)	Fig. (d)
Fig. (e)	Fig. (f)

## Lesson 2

1. d. it damages the internal moving parts of

machines.

2. c. slipping down.

3. c. friction force.

4. d. (a), (b) and (c).

5. d. all the previous answers.

6. a. it causes damages for machines.

7. d. (a) and (c).

8. c. increasing the surface area of

the moving parts.

9. d. (a) and (b)

10. d. rough balls.

11. d. (a) and (b).

12. d. decrease air resistance.

13. a. squeeze the water out.

14. b. decreases

2. 1. (✓)

2. (✓)

3. (✓)

4. (✓)

5. (✓)

6. (x) ... decrease the friction force.



7. (✓) 8. (✓)  
9. (x) ... slowly.  
10. (x) ... must decrease the speed ...  
11. (x) ... decreases ... 12. (✓)

3. 1. Friction force. 2. Friction force.  
3. Friction force. 4. Lubricants and oil.  
5. Ball bearings. 6. Ball bearings.  
7. Ball bearings.

4. 1. Friction force - direction.  
2. Friction force 3. Lighting  
4. friction 5. Damage of machines.  
6. friction force. 7. friction - damage.  
8. Lubricants - oil 9. Ball bearings.  
10. ball bearings.  
11. metallic - smooth.  
12. air resistance - fuel.  
13. streamline shapes.  
14. narrow channels - curved grooves  
15. narrow channels - curved grooves  
16. decrease the friction force

5. 1. To control the car speed and to change the car direction.  
2. Because it causes damage for almost of machines, so a lot of money is wasted.  
3. Because the friction between them raises their temperature to more than a certain extent causing their damage.  
4. To decrease the friction force between their moving parts.  
5. To decrease (reduce) the friction force.  
6. Because they made of smooth metallic balls.  
7. To reduce the air resistance and also the consumption of fuel.  
8. To decrease (reduce) the friction force.  
9. Because it causes damage for almost of machines, so a lot of money is wasted.  
10. Because by increasing the speed of the car, the air resistance increases and to overcome this resistance more energy is exerted and more fuel is consumed.  
11. Because grooves and narrow channels are necessary to squeeze water out, as water reduces friction and makes the control of the car very hard.

6. They are a group of metallic balls that have smooth surfaces.

7. 1. We can't control the car speed and we can't change the car direction.  
2. I can't walk and I will slip down.  
3. The friction arises between these parts causing damage of machines and losing a lot of money.  
4. The friction between their moving parts increases causing increase in their temperature to more than a certain extent and damage of the machines.  
5. The air resistance increases and the consumption of fuel increases.  
6. Machines are damaged.  
7. The friction between these moving parts decreases.  
8. The water is trapped under tires and the car can't be controlled.  
9. The water is trapped under the tires and the car can't be controlled.

8. 1. They are used to decrease the friction force.  
2. They transmit the motion from the car engine to the wheels to decrease friction.  
3. They are used to decrease the friction force.

9. Look at the main book on pages (27, 28).  
10. 1. using lubricants and oil.  
2. using ball bearings.

## Times Questions

1. (A) - (B)  
2. streamline - air resistance - fuel.  
3. 1. Air resistance. 2. friction - shoes  
4. 1. Due to the effect of the friction force between its moving parts.  
2. Because it forms a thin layer between the internal moving parts of machines, where this layer reduces the effect of the friction force.

## Unit TWO

## Lesson 1

1. 1. c. stomach. 2. d. fist.  
3. b. strong hollow 4. b. wall  
5. a. arteries.  
6. a. Veins 7. b. Veins  
8. c. Arteries 9. a. Arteries  
10. c. carrying oxygen.  
11. b. white blood cells.  
12. a. plasma. 13. b. Plasma.  
14. b. Red blood cells. 15. d. Blood platelets.  
16. d. (a), (b) and (c). 17. a. Left atrium  
18. b. right ventricle. 19. a. venae cavae.  
20. c. left ventricle. 21. b. carbon dioxide  
22. d. all the body cells.  
23. a. Systemic blood circulation.  
24. d. All answers are correct.  
25. c. eating more fats.

2. (1) 1. b 2. g 3. e 4. a  
5. f 6. d 7. c  
(2) 1. d 2. e 3. b 4. a

3. 1. veins. 2. valve  
3. left ventricle. 4. pulmonary artery.  
5. plasma - blood platelets.  
6. blood clot

4. 1. (✓)  
2. (x) ... inside the chest cavity.  
3. (✓) 4. (✓) 5. (✓)  
6. (x) ... carry the blood from the heart to all the body parts.  
7. (✓)  
8. (x) The pulmonary artery ...  
9. (x) ... veins.  
10. (x) White blood cells ...  
11. (x) ... without nuclei. 12. (✓)  
13. (x) ... plasma.  
14. (x) Blood platelets ... 15. (✓)  
16. (x) ... the blood carrying carbon dioxide ...  
17. (✓)  
18. (x) ... carbon dioxide.  
19. (x) ... to the left atrium.  
20. (x) ... rich in oxygen.  
21. (x) ... drink suitable amounts of water ...  
22. (x) ... harm the circulatory system.

5. 1. The circulatory system.  
2. The heart. 3. Ventricles.  
4. Valve. 5. Blood vessels.  
6. Pulmonary artery. 7. Left ventricle.  
8. Veins. 9. Blood capillaries.  
10. Pulmonary artery.  
11. Red blood cells.  
12. White blood cells.  
13. Blood platelets. 14. Plasma.  
15. Plasma. 16. Blood platelets.  
17. Blood.  
18. The minor (pulmonary) blood circulation.  
19. The major (systemic) blood circulation.  
20. Aorta. 21. Left atrium.  
22. Venae cavae. 23. Blood capillaries.  
6. 1. heart - blood - blood vessels.  
2. digested food - oxygen gas  
3. two lungs. 4. heart  
5. four - blood - blood vessels.  
6. two - atrium - ventricle.  
7. valve 8. ventricle - valve.  
9. blood vessels.  
10. arteries - veins - blood capillaries.  
11. arteries.  
12. the heart - all the body parts.  
13. veins.  
14. Arteries - veins.  
15. blood capillaries. 16. pulmonary artery.  
17. the pulmonary veins.  
18. deoxygenated - oxygenated  
19. veins - arteries.  
20. red blood cells - blood platelets - plasma.  
21. Red 22. White  
23. Red blood cells - white blood cells  
24. blood clots 25. Blood  
26. blood circulation. 27. carbon dioxide.  
28. atrium - pulmonary veins.  
29. pulmonary artery 30. Right.  
31. Right - the pulmonary artery.  
32. aorta.  
33. the pulmonary (minor) blood circulation - the systemic (major) blood circulation.  
34. 70 beats 35. Pushing blood  
36. increases.  
37. heart muscle - blood circulation.



1. Because it transports oxygen, digested food and water to all the body cells and transports the wastes to special body cells to get rid of them.
2. To prevent the mixing of blood in the two sides of the heart.
3. Due to the presence of one way valve between each atrium and ventricle.
4. To allow the blood to pass from atrium to ventricle and not in the opposite direction.
5. Because it contains plasma which is a watery fluid.
6. To allow the blood to deliver food and oxygen to the cells, then carry carbon dioxide and wastes.
7. Because they carry oxygen from the lungs to all the body cells and carry carbon dioxide from the cells to the lungs.
8. Because they coagulate blood (form blood clot) to prevent bleeding when the body is wounded.
9. Because it carries the needed food substances to the cells and carries the harmful waste products away from the cells.
10. Because they defend the body against microbes.
11. Because it carries the blood from the heart to all the body parts.
12. Because it is necessary for :
  - The transfer of materials to all the body cells.
  - The defence and protection of the body.
  - To strengthen the heart muscle and to activate the blood circulation.
  - Because it harms the heart and weakens the blood circulation.
  - Because it harms the heart and weakens the blood circulation.
  - To keep our circulatory system healthy.
8. 1. - It transports the digested food, oxygen and water to all body cells.
  - It transports wastes formed in the cells to special organs to get rid of them.
  - It helps in maintaining the body health.
 2. It pumps the blood continuously throughout the body.

3. It allows the blood to flow from the atrium to the ventricle and not in the opposite direction.
4. It prevents the mixing of blood in the two sides of the heart.
5. They carry the blood from all the body parts to the heart.
6. They transport the blood from the heart to all the body parts.
7. - They connect the ends of arteries and the beginnings of veins.
  - Their thin walls allow the blood to deliver food and oxygen to the cells and to carry carbon dioxide and wastes away from them.
8. - They carry oxygen from the lungs to all the body cells.
  - They carry carbon dioxide from the body cells to the lungs.
9. They defend the body against microbes.
10. They help in coagulation of blood (formation of blood clot) so they help in healing wounds.
11. - It carries the needed food substances to the cells.
  - It carries the harmful waste products away from the cells.
12. - The transfer or delivery of materials to all the body cells.
  - The defence and protection of the body.

9. 1. The blood in the two sides of the heart will be mixed.
2. The blood will return back from the ventricles to the atria during the contraction of ventricles.
3. The blood can't deliver food and oxygen to the cells and can't carry carbon dioxide and wastes away from the cells.
4. It will push the blood that is rich in oxygen to all the body parts through aorta.
5. More bleeding will occur when the body is wounded.
6. The white blood cells will attack these microbes.
7. The blood platelets will form blood clot to prevent bleeding.
8. The rate of your heartbeats will increase.
9. Smoking will harm his heart and weakens the blood circulation.

10. 1. It is the blood circulation between the heart and the two lungs.
2. It is a yellow watery fluid in which all the blood components are suspended.
3. The paths of blood throughout the body.
4. It is the blood circulation between the heart and all the parts of the body.

11. Look at the main book on page (45).

Points of comparison	Red blood cells	White blood cells	Blood platelets
- Definition :	They are red cells without nuclei.	They are white cells with different forms of nuclei.	They are small cell fragments.
- Function :	They carry oxygen gas from lungs to all body cells. They carry carbon dioxide gas from all body cells to lungs.	They defend the body against microbes.	They help in coagulation of blood, so they help in healing wounds.



12. 1.

2. The right atrium contains deoxygenated blood, while left atrium contains oxygenated blood.

13. a. ① Red blood cells. ② White blood cells. ③ Blood platelets. ④ Plasma.
  - b. Plasma.
  - c. Component number ① :
    - They carry oxygen gas from the lungs to all the body cells.
  - They carry carbon dioxide gas from the cells to the lungs.
  - Component number ② :
    - They defend the body against microbes.

1. Pulmonary artery. 2. Aorta.
3. Right atrium.
4. Venae cavae veins.
5. Pulmonary veins.
6. Left atrium.
7. Right ventricle.
8. Valve.
9. Left ventricle.

15. a. blood vessels.

- b. artery - heart - all the body parts.
- c. blood capillaries - allow blood to deliver food and oxygen to the cells, then take carbon dioxide and wastes from the cells.
- d. vein - all body parts - heart.

### Times Questions

1. ② ③ ④ ⑤ ⑥ 7. ⑧ 8. ⑨ 9. ⑩
2. c. White blood cells.
3. d. His pulse rate returned to normal in less than 6 minutes.

4. Fig. ③

5. d. Blood vessel ① is artery and blood vessel ② is vein.

6. 1. → C → F 2. → a → g 3. → d → e 4. → b → h

### Lesson 2

1. c. Solid wastes 2. d. solid wastes 3. a. proteins. 4. b. lungs. 5. d. kidneys. 6. d. blood capillaries. 7. d. (a) and (b). 8. a. urine 9. a. The urinary 10. b. abdominal 11. a. skin 12. a. Two kidneys 13. c. urinary 14. b. Ureter 15. d. gall bladder. 16. c. Sweat gland 17. c. Urinary bladder 18. d. Urethra 19. a. Schistosomiasis 20. b. urinating in irrigation canals.

2. 1. c 2. d 3. a 4. b



3. 1. (✓) 2. (x) ... through lungs ...  
3. (✓) 4. (✓)  
5. (x) ... are called sweat.  
6. (x) ... through the two kidneys (the urinary system)  
7. (✓)

8. (x) The urinary system consists of ...  
9. (x) ... both sides of the backbone.  
10. (x) ... in the form of urine.  
11. (x) ... a bean ...  
12. (x) ... called ureters.  
13. (✓) 14. (✓) 15. (✓)  
16. (x) ... through arteries.  
17. (x) ... through urethra.  
18. (x) ... less salt ... 19. (✓)

4. 1. Excretory materials (cell wastes).  
2. Solid wastes.  
3. Carbon dioxide and water vapour.  
4. The urinary system.  
5. The two kidneys.  
6. The two lungs.  
7. Urine.  
8. Kidneys.  
9. Ureter.  
10. Urethra.  
11. Urinary bladder.  
12. Urethra.  
13. Artery.  
14. Vein.  
15. Sweat glands.  
16. Skin.  
17. Sweat.

5. 1. Excretory materials – solid wastes  
2. Solid wastes 3. excretory materials  
4. harmless – poisonous  
5. poisonous  
6. Carbon dioxide gas – water vapour.  
7. Urea – uric acid – nitrogenous wastes.  
8. the two lungs. 9. the blood capillaries.  
10. urinary  
11. skin – the two lungs.  
12. The urinary system – skin.  
13. abdominal  
14. urinary – two kidneys – two ureters  
15. The two kidneys  
16. backbone. 17. Kidney  
18. urea – uric acid – some excess salts.

19. urine.  
20. Ureter – the urinary bladder.  
21. urea – uric acid. 22. urethra.  
23. bean 24. artery – vein.  
25. one million 26. urinary bladder  
27. urethra.  
28. some excess salts – sweat.  
29. water – summer. 30. schistosomiasis

6. 1. Because the excretory materials contain poisonous materials and other harmless materials that the body can't use them.  
2. Because the blood carries these wastes to special organs that get rid of them.  
3. Because the skin gets rid of some excess salts and excess water in the form of sweat.  
4. Because faeces is an indigestible food that stored in the large intestine until it passes out of the body.  
5. Because :

- It filters the blood from some excess salts, urea, uric acid and other waste materials.
- It expels these wastes outside the body in the form of urine.

6. To store the urine until it is released outside the body.

7. Because they filter the blood from the excretory materials which contain poisonous materials.

8. To transfer the urine from the kidneys to the urinary bladder.

9. Because sweating increases in summer due to the high temperature.  
10. Because the sweat consists of some excess salts and excess water.

11. To get rid of some excess salts and excess water.

12. To keep the kidneys or the urinary system healthy.

13. To avoid the infection by schistosomiasis disease.

14. To keep your urinary system healthy.

1. The waste materials will harm the body causing poisoning.

2. The excretory materials will remain in the blood causing poisoning.

3. We couldn't store urine until releasing it outside the body.

4. The urine can't be transferred from the two kidneys to the urinary bladder.

5. The skin can't excrete some of the excess salts and water in the form of sweat.

6. The urinary system will be harmed and the functions of the kidneys are affected.

7. This will harm the urinary system and the two kidneys.

8. The urinary system will be harmed.

9. 1. – It filters the blood from urea, uric acid, some excess salts and other waste materials.  
– It gets rid of these wastes in the form of urine.

2. It transfers the urine from the kidney to the urinary bladder.  
3. It stores the urine temporarily until it is released outside the body.

4. It allows the urine to pass outside the body.

5. It contains sweat glands which get rid of some excess salts and excess water in the form of sweat.

9. 1. They are the excretory materials that produced from breaking down of proteins that produces urea and uric acid.

2. They are the waste materials that produced inside the body cells and the body must get rid of them.

3. It is the system that gets rid of (clarifies) the nitrogenous wastes (urea & uric acid), excess salts and excess water from the body.

4. They are bean-shaped organs located on both sides of the backbone.

5. They are two narrow tubes that connect the two kidneys to the urinary bladder.

6. It is a balloon-like sac that receives the urine from the two ureters.  
7. It is a tube which extends from the urinary bladder and opens outside the body.

10. 1. – Carbon dioxide is produced from burning of the digested food using oxygen inside the body cells.  
– Nitrogenous wastes are produced from the breaking down of proteins.  
2. The blood carries the excretory wastes from the cells to special organs to get rid of them.

3. – Drink suitable amounts of clean water daily.  
– Eat balanced healthy food that is low in salts.

- Don't keep urine for long periods.  
– Keeping away from the irrigation canals and avoid urination in it.

11. 1. urinary system.  
2. ③ – filtration of the blood from urea, uric acid, excess salts and other waste materials.

3. ③  
4. ④ – urinary bladder ⑤  
5. ① – ②  
6. urethra – urine

12. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

13. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

14. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

15. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

16. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

17. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

18. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

19. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

20. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

21. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

22. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

23. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

24. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

25. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

26. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

27. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

28. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

29. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

30. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

31. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

32. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

33. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

34. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

35. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

36. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

37. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

38. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

39. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

40. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

41. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

42. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

43. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

44. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

45. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

46. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

47. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

48. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

49. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

50. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

51. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

52. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

53. 1. ①  
2. ②  
3. ③  
4. ④  
5. ⑤  
6. ⑥

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110. 1. ①  
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111. 1. ①  
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112. 1. ①  
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113. 1. ①  
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114. 1. ①  
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117. 1. ①  
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118. 1. ①  
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119. 1. ①  
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120. 1. ①  
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121. 1. ①  
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122. 1. ①  
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123. 1. ①  
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124. 1. ①  
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## Unit THREE

## Lesson 1

1. a. soil. 2. d. milk.
3. d. (a), (b) and (c).
4. d. all the previous answers.
5. d. (a) and (b).
6. b. Humus
7. d. Humus.
8. c. gravel
9. b. humus.
10. a. it provides it with nutrients and minerals.
11. d. all the previous answers.
12. c. Ethiopian
13. b. Ethiopian Plateau.
14. a. layers of clay and silt.
15. d. all the previous answers.
16. d. all the previous answers.
17. d. (a) and (c)
18. b. digging tunnels.
19. a. Roots of plants
20. c. Ants and other insects
21. c. fixing the plant in the soil.
22. c. Their tunnels allow air, water and nutrients to pass easily through soil, then to plant roots.

2. 1. (x) .... non-compacted superficial ....
2. (✓)
3. (x) .... are sand, clay and humus.
4. (✓) 5. (✓) 6. (✓)
7. (✓) 8. (✓)
9. (x) .... the Ethiopian Plateau. 10. (✓)
11. (x) .... of three layers.
12. (x) .... formed in the top soil layers.
13. (x) .... contain pieces of rocks.
14. (x) .... humus, worms, ants, spiders small pieces of rocks and leaves of plants
15. (x) .... of roots of plants.
16. (x) .... humus is formed. 17. (✓)
18. (x) .... is from the importance of roots of plants for the soil.
19. (✓)
3. 1. Soil. 2. Humus.
3. Soil.
4. Humus.
5. The Ethiopian Plateau.
6. Humus.
7. Humus.
8. Top soil layers.
9. Lower soil layers.
10. Roots of plants.
11. Rocky layers.
12. Humus.

4. 1. Soil - the Earth's crust.
2. rocks.
3. sand - humus - clay.
4. rocks - minerals. 5. soil.
6. Humus
7. Humus
8. Soil
9. winds
10. Ethiopian Plateau. 11. Winds - heat
12. The flood water - clay and silt.
13. Top soil layers - lower soil layers - rocky layers.
14. Top
15. Lower soil layers
16. Roots of plants
17. nutrients - the soil erosion
18. Humus.
19. Roots of plants
20. nests - eggs.
21. air - water - nutrients
22. Humus
23. earthworms - some spiders.

5. 1. Due to the variation in types of rocks and minerals that form soil.
2. Because it is necessary for :  
- Plant growth.  
- Animals and human that eat these plants.  
- Animals that make their homes in soil.
3. Because plants take minerals and other nutrients from the soil to live and grow.  
- Soil is necessary for animals, because :  
- They eat plants that previously depend on soil.  
- Some animals depend on soil as a shelter.  
- Soil is necessary for humans, as they eat plants and animals that previously depend on soil.
5. Due to the colour of humus which is dark brown or black.
6. Because water rushing and winds break down rocks into small pieces which form soil.
7. Because :  
- They help the soil to be cohesive.  
- They add nutrients to soil as they convert into humus after death.  
- They prevent the soil erosion from happening quickly.
8. Because :  
- They help in the growth of plant roots, as the tunnels that are formed by them allow air, water and nutrients to pass through soil, then to the plant roots.  
- When these organisms die, their bodies decay forming humus.

9. As it provides soil with nutrients.
10. They are important for soil as they form humus when their bodies decay after death.
11. Because soil represents the shelter for them.
12. Because these tunnels allow air, water and nutrients to pass easily through soil, then to plant roots causing their growth.
13. Because :  
- Their tunnels allow air, water and nutrients to pass to plant roots causing their growth.  
- Their death forming humus that adds nutrients to soil and plants.

6. 1. It is a thin non-compacted upper layer which covers the Earth's crust.
2. It is the decayed remains of animals and plants mixed with the soil components and its colour is dark brown or black.

7. 1. Humus can be formed.
2. There are no plants and some animals will die.
3. Rocks are broken into small particles with different sizes and shapes.
4. They are broken into small particles that carried by flood water to River Nile, then to Nile Valley, where they are deposited as layers of clay and silt.
5. - The soil erosion occurs quickly.  
- Soil is poor in nutrients as humus isn't formed.  
- Soil isn't cohesive.  
- Plants cannot be fixed in the soil.
6. Humus can't be formed and plants will die.
8. 1. When the rocks of Ethiopian Plateau exposed for millions of years to several factors (as heat, winds, rains and running water), they are broken into small particles with different sizes and shapes.  
2. The flood water carried these particles to River Nile, then to Nile valley, where they are deposited year after year as layers of clay and silt.
9. Soil is made of many components as :  
- Pieces of rocks ( that composed of sand, clay, minerals and gravel).  
- Water. - Air. - Silt. - Humus.

10. Because when they die, their bodies decay forming humus that is a main component of soil.
11. It is necessary for all living organisms, where :  
- Plants take minerals and other nutrients from soil to live and grow.  
- Animals eat plants that previously depend on soil and some animals make their homes in soil.  
- Human eat plants and animals that previously depend on soil.
12. ① Humus. ② Particles of mud. ③ Silt. ④ Large particles of sand. ⑤ Gravel.
13. 1. Water rushing, where water breaks down rocks into small pieces forming soil.  
2. Winds that breaks down rocks forming soil.  
3. Heat and rains.

## Times Questions

1. Top soil layer.  
2. a. - They help the soil to be cohesive.  
- They add nutrients to soil as they are converted into humus after death.  
- They prevent the soil erosion from happening quickly.  
b. It considered the shelter for them, as they make their homes underground by digging tunnels.  
3. They form humus after death.
2. ① Ethiopian. ② Heat. ③ Winds. ④ River Nile. ⑤ Nile.
3. 1. Earthworm in the top soil layers.  
2. It is useful for soil.  
3. - They help in the growth of plant roots, where they dig tunnels that allow air, water and nutrients to pass easily through soil, then to plant roots.  
- When they die, their bodies decay forming humus.



## Lesson 2

1. b. Silt
2. d. (a) and (b).
3. a. yellow colour.
4. b. black
5. b. small.
6. c. silt soil.
7. b. medium
8. c. medium.
9. d. (b) and (c) are correct.
10. a. good.
11. b. sand soil
12. a. is very compacted.
13. d. (b) and (c).
14. d. Clay
15. a. sand soil.
16. c. (a) and (b)
17. a. drains
18. b. silt soil.
19. b. silt soil.
20. a. very fertile soil.
21. a. a great ability to drain water.
22. c. less fertile.
23. a. peanut plant
24. d. rice.
25. a. Cotton
26. b. silt soil.
27. d. (a) and (b).
28. c. Peanut

2. (a) 1. c 2. d 3. b
- (b) 1. b 2. c 3. a

3. 1. (✓) 2. (x) Silt soil ...
3. (x) ... is yellow, while that of the clay soil is black.

4. (✓) 5. (x) ... are very small.
6. (✓)
7. (x) Clay soil is more compacted than silt soil.
8. (x) ... of sand soil ... 9. (✓)
10. (x) ... is poorly aerated, while ... is well aerated.

11. (✓) 12. (✓)
13. (x) Clay soil has low drainage of water ...
14. (✓) 15. (✓) 16. (✓)
17. (✓) 18. (✓)
19. (x) Sweet potatoes, potatoes ...
20. (✓) 21. (✓)
22. (x) ... in clay soil.

4. 1. Sand soil.
2. Silt soil.
3. Clay soil.
4. Silt soil.
5. Clay soil.
6. Sand soil.
7. Sand soil.
8. Clay soil.
9. Silt soil.
10. Silt soil.
11. Clay soil.
12. Sand soil.
13. Clay soil.
14. Sand soil.
15. Clay soil.
16. Silt soil.

17. Silt soil.
18. Sand soil.
19. Silt soil
20. Clay soil.
21. Sand soil.
22. Peanut plant.
23. Potatoes and sweet potatoes.
24. Clay soil.
25. Silt soil.
26. Silt soil.

5. 1. sand - silt - clay soils.
2. Silt - sand
3. Silt
4. clay - silt - sand
5. Clay - sand
6. Silt
7. Silt - sand
8. clay
9. sand - silt
10. sand - clay
11. sand - clay
12. Sand - moderately 13. highly
14. Clay - sand
15. Sand - clay
16. Silt - humus.
17. humus.
18. Sand - humus.
19. more - sand
20. moderate - high - high.
21. Clay - sand
22. Sand - potatoes.
23. sand
24. sand - clay
25. Silt
26. Silt - sand
27. Sand - silt
28. silt - wheat
29. clay.
30. lemon - silt - cotton

6. 1. Because it is composed mainly of sand particles.
2. Because the particles of sand soil are weakly compacted, the particles of silt soil are moderately compacted and the particles of clay soil are highly compacted.
3. Because the clay soil has the highest absorption of water than silt and sand soils.
4. Because it has weakly compacted particles.
5. Because it has the slowest drainage of water.
6. Because it has moderately compacted particles.
7. Because it has highly compacted particles.
8. Because its particles are highly compacted.
9. Because its particles are weakly compacted (loose).
10. Because its particles are moderately compacted.

11. Because its particles are weakly compacted (loose).
12. Because it is rich in humus.
13. Because it is rich in humus.
14. Because it contains medium amount of humus.
15. Because it rarely contains humus.
16. Because sand soil is suitable for cultivation of plants that produce tubers as potatoes and sweet potatoes.
17. Because sand soil is suitable for cultivation of plants which give fruits beneath soil surface.

7. 1. The odd statement: Poorly aerated.
2. The odd statement: Poor in humus.
3. The odd statement: Dark in colour.
4. The odd statement: Sand soil.
5. The odd statement: Silt soil.
6. The odd word: Rice.
7. The odd word: Lemon.
8. The odd word: Potatoes.
9. The odd word: Wheat.
10. The odd word: Pomegranates.

8. - Clay soil: Cotton - Rice - Wheat.
- Silt soil: Lemon - Strawberry - Pomegranates.
- Sand soil: Potatoes - Sweet potatoes - Cactus.

9. Look at the main book on page (118).
10. 1. Look at the main book on pages (114, 115).
2. Look at the main book on page (113).

11. 1. (1) Humus. (2) Sand soil.
- (3) Silt soil. (4) Clay soil.
2. Figure (b).
3. - The silt soil is highly fertile as it is rich in humus.
- The clay soil is fertile as it has a medium amount of humus.
- The sand soil is less in fertility as it is poor in humus.

12. 1. It is the soil that composed mainly of sand particles, a small amount of clay and silt, and rarely contains humus.
2. It is the soil that composed mainly of clay and silt particles, and a small amount of sand and humus.

3. It is the soil that composed of a mixture of equal amounts of gravel, sand, clay and silt, but it contains more humus.
4. It is the percentage of humus in soil.

13. 1. Clay soil - Silt soil - Sand soil.
2. Sand soil - Silt soil - Clay soil.
3. Clay soil - Silt soil - Sand soil.
4. Sand soil - Silt soil - Clay soil.
5. Clay soil - Silt soil - Sand soil.
6. Silt soil - Clay soil - Sand soil.

14. - Clay soil: Cotton and Sugar cane.
- Sand soil: Potatoes and cactus.
- Silt soil: Orange and lemon.

15. 1. Fig. (a) represents sand soil, fig. (b) represents silt soil and fig. (c) represents clay soil.
2. Silt soil in fig. (b).
3. Clay soil in fig. (c).
4. Silt soil in fig. (b).

## Times Questions

1. 3. Soil (a) is sand soil, soil (b) is clay soil and soil (c) is silt soil.
2. 4. Sample (A) is sand soil, sample (B) is clay soil and sample (C) is silt soil.

3. 1. Tube (c).
2. Tube (a).
3. Tube (b).
4. The sand soil is well aerated and has low water absorption, the clay soil is poorly aerated and has high water absorption and the silt soil is moderately aerated and has medium water absorption.

4. 1. - Fig. (a) contains sand soil.
- Fig. (b) contains silt soil.
- Fig. (c) contains clay soil.
2. Clay soil in fig. (c).
3. - The sand soil has the greatest drainage of water and the lowest retaining of water.



- The clay soil has the slowest drainage of water and the highest retaining of water.  
- The silt soil has the medium drainage of water and the medium retaining of water.

## Lesson 3

1. c. Soil pollution  
2. d. (a), (b) and (c).  
3. a. pollution.  
4. d. Chemical pesticides  
5. c. natural fertilizers.  
6. b. soil pollutants.  
7. a. Chemical pesticides  
8. a. Chemical fertilizers  
9. d. (a), (b) and (c).  
10. b. rising the level of ground water.  
11. a. increase the acidity of soil.  
12. b. rising the level of ground water.  
13. d. (a) and (b).  
14. d. (a) and (b).  
15. a. prevent its dryness.  
16. d. (b) and (c).  
17. d. (a) and (b).  
18. d. using chemical fertilizers instead of natural fertilizers.

2. 1. d 2. e 3. g  
4. a 5. b 6. c

3. 1. (✓) 2. (✓) 3. (✓)  
4. (✓)

5. (x) ... contaminates plants and harms ...

6. (x) Using natural enemies to ...

7. (x) Adding chemical fertilizers in big quantities ...

8. (✓)

9. (x) ... dissolving industrial wastes ...

10. (x) ... of acidic rains. 11. (✓)

12. (x) ... to increase the salinity of soil.

13. (✓) 14. (✓) 15. (✓)

16. (✓) 17. (✓)

18. (x) ... built far from ...

19. (✓) 20. (✓)

21. (x) Natural fertilizers ... instead of chemical fertilizers.

4. 1. Pollution.  
2. Soil pollution.  
3. Chemical pesticides (insecticides).  
4. Chemical fertilizers. 5. Chemical fertilizers.  
6. Industrial wastes. 7. Acidic rains.  
8. Acidic rains. 9. Industrial wastes.

5. 1. Pollution  
2. Soil pollution  
3. soil pollutants. 4. Soil pollutants  
5. Soil pollutants.  
6. chemical fertilizers - chemical pesticides  
- industrial wastes - increasing the soil salinity.

7. Chemical pesticides 8. plants.  
9. Chemical fertilizers  
10. humans - animals 11. Acidic rains  
12. Industrial wastes (Acidic rains)

13. Industrial wastes 14. soil salinity  
15. Increasing periods between the irrigation times - rising the level of ground water  
16. the soil salinity.  
17. factories - the agricultural areas.

18. Industrial wastes 20. natural - chemical  
19. soil dryness.

6. 1. Because they reduce the ability of the agricultural soil for cultivation causing the death of plants and harm the animals and human health.  
2. To eradicate (kill) the pests of the agricultural crops.  
3. Because they contaminate plants and harm the human and animal health.

4. Because:  
- They cause the death of living organisms that live in soil.  
- They cause harms for humans and animals that feed on plants as chemical fertilizers leak to plants that grow in soil.

5. Because they increase the soil acidification and deprive plants from the soil salts that are necessary for plant growth.  
6. Because it increases the soil salinity.  
7. Due to increasing the periods between the irrigation times and rising the level of ground water.

- They deprive plants from the soil salts that are necessary for plant growth.  
6. It causes loss of the cultivated plants and affects plant growth.

10. 1. It is any change in the soil that disturbs its natural balance and harms its living organisms.  
2. It is any change in the environment that disturbs its natural balance.

11. - Increasing periods between the irrigation times.  
- Rising the level of ground water.

12. 1. - Establishing of factories far from the agricultural areas.  
- The treatment of the industrial wastes by following the technological methods.  
2. Irrigate the agricultural lands regularly.

13. 1. - don't grow - the soil salinity increases.  
- grow.  
2. Increasing the soil salinity prevents plant growth.

1. Plants die due to the industrial wastes that are produced from his factory and causes soil pollution.  
2. He must treat the industrial wastes that are produced from his factory by following the technological methods.

2. 1. Bean seeds in pot (b) will grow.  
2. Because in pot (a), the salt increases the soil salinity that prevents the growth of bean seeds.

3. 1. c 2. a 3. d 4. b

## Times Questions

1. Plants die due to the industrial wastes that are produced from his factory and causes soil pollution.  
2. He must treat the industrial wastes that are produced from his factory by following the technological methods.

2. 1. Bean seeds in pot (b) will grow.  
2. Because in pot (a), the salt increases the soil salinity that prevents the growth of bean seeds.

3. 1. c 2. a 3. d 4. b



# 2

## Guide Answers of Test Yourself

PART



### Guide Answers of Test yourself

#### Test yourself 1

1. air resistance. 2. surface area - the speed  
3. surface area - surface material - speed.  
4. surface area - the air resistance.  
5. aircrafts - decrease the air resistance.

- (A) 1. To increase the air resistance by  
increasing their surface area, where  
this causes a decrease in their speed  
on landing.  
2. To decrease the air resistance.

- (B) 1. The speed of the body.  
2. The surface area of the moving body.

1. material.  
2. ... increases.  
3. ... decrease ...  
4. Air resistance ...  
5. ... increases, ...

1. It is the friction force resulting from  
the movement of an object through air.  
2. To decrease the air resistance.  
3. Rockets and train.  
4. backward.

1. d 2. c 3. e 4. b 5. a

#### Test yourself 2

- (A) Water resistance decreases by :  
- decreasing the speed of the body  
through water.

- (B) 1. Because the surface area of the body.  
- decreasing the friction force is smaller  
than the movement force.  
2. Because the friction force is more  
than the movement force.

1. Water resistance 2. opposite direction.  
3. streamline 4. decreases.  
5. air resistance.

- (A) 1. Because by decreasing the speed  
of the body through water, water  
resistance decreases and vice versa.  
2. Because they act in the opposite  
direction of the movement.  
3. To decrease the water resistance that  
opposes its motion.

- (B) It is the friction force resulting from  
the movement of any object through water.

1. b. a direct  
2. b. water resistance  
3. b. friction force between the two bodies is  
smaller than the movement force.  
4. a. larger than. 5. d. (e) and (b)

- (A) 1. Direct relation.  
2. the water resistance.

- (B) 1. The water resistance decreases.  
2. The water resistance that opposes  
him increases.

#### Test yourself 3

1. grooves  
2. lighting a match - changing the car  
direction.  
3. fuel.  
4. Car brakes.

- (A) 1. To decrease the friction force  
between their internal moving parts.  
2. Because friction raises  
the temperature of the internal  
moving parts of machines,  
so machines are damaged and a lot  
of money is wasted.

3. Because grooves are necessary  
to squeeze water out as water  
decreases friction and makes  
the control of the car very hard.

- (B) 1. Oil decreases friction ...  
2. ... the friction force decreases and  
the control of the car is very hard.

- (A) 1. We can't control the car speed and  
also can't change the car direction.  
2. Machines are damaged.  
3. Water is trapped under the tires and  
the car can't be controlled.

- (B) 1. (x) 2. (✓) 3. (✓) 4. (✓)

1. Lubricants and oil.  
2. Ball bearings.  
3. Friction force.  
4. Car brakes.  
5. Friction force.



5 (A) 1. d. (b) and (c).

2. c. ball bearings.
  3. d. it causes increasing of temperature of internal moving parts of machines.
  4. c. friction force.
- (B) Ball bearings, lubricants and oil.

### Answers of Model Exam on unit 1

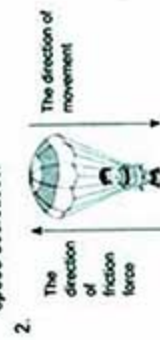
1. Water resistance. 2. Friction force.
  3. Friction force. 4. Ball bearings.
  5. Air resistance.
2. 1. Friction force – opposite  
2. The speed of the body – the surface area of the body  
3. decrease water resistance – decrease air resistance.  
4. direct  
5. the ground – slipping down.  
6. Lighting

3 (A) 1. To decrease air resistance.

2. Due to the friction force between the internal moving parts.
3. To squeeze the water out.

(B) The folded one reaches the ground firstly, because the air resistance decreases when the surface area decreases.

4. 1. To increase air resistance by increasing its surface area and accordingly falling speed decreases.



3. – The surface area of the moving object.  
– The speed of object through air.

5. 1. (x) ... there is a friction force between ...  
2. (✓)  
3. (✓)  
4. (x) ... by increasing the speed ...  
5. (✓)

### Test yourself 4

1. deoxygenated – oxygenated  
2. the heart – blood vessels – blood.  
3. fist.  
4. atria – ventricles.  
5. blood vessels.  
6. Arteries – veins

- 2 (A) 1. Because :  
– It transports the digested food, oxygen gas and water to all the body cells.  
– It transports the cell wastes to special organs to get rid of them.  
– It helps in maintaining the body health.
2. To allow the blood to flow from the atrium to the ventricle and prevents its returning back.
3. To allow the blood to deliver food and oxygen to the cells and carries carbon dioxide and wastes.

- (B) 1. They are the paths of blood throughout the body.
2. It is the system that transports the digested food, oxygen gas and water to all the body cells and carries the wastes away from the body cells.

3. 1. Heart. 2. Atria. 3. Aorta.  
4. Blood capillaries. 5. Valve.

- 4 (A) 1. blood vessels. 2. ventricles  
3. valves 4. ventricle

- (B) 1. The heart can't transport the blood containing digested food, oxygen and water throughout the body.

2. The blood rich in oxygen will be mixed with the blood rich in carbon dioxide.

- 5 (A) 1. Left atrium. 2. Valve.  
3. Left ventricle. 4. Right ventricle.  
5. Right atrium. 6. Aorta.  
7. Pulmonary.

- (B) – It pumps the blood continuously throughout the body.  
– Its size is about your fist.  
– It locates inside the chest cavity between the two lungs.

### Test yourself 5

1. d. blood capillaries. 2. d. left  
3. b. Blood platelets  
4. a. keep exercising 5. b. minor

- 2 (A) 1. To defend the body against the microbes that attack it.  
2. Because the left ventricle pushes the blood to all the body cells, while the right ventricle pushes the blood to the two lungs only.  
3. Because it carries the blood from the heart (left ventricle) to all the body cells.
- (B) 1. rich in oxygen 2. right ventricle  
3. red blood cells. 4. right atrium

3. 1. Plasma. 2. Red blood cells.  
3. Blood platelets.  
4. The pulmonary (minor) blood circulation.  
5. Right ventricle.

4. a. 1. Aorta. 2. Venae cavae.  
3. Pulmonary artery.  
4. Pulmonary veins.

- b. 1. – 4. c. 2. – 3.  
d. carbon dioxide gas – oxygen gas.  
e. pulmonary (minor) – systemic (major)

- 5 (A) 1. b 2. d 3. c 4. e 5. f 6. a

- (B) 1. Keep exercising to strengthen the heart muscle and to activate the blood circulation.  
2. Eat healthy and balanced food that is low in fats and salts.  
3. Avoid smoking and smokers.  
4. Avoid exposure to infections and accidents.

### Test yourself 6

1. excretory materials – solid wastes.  
2. abdominal  
3. skin – urinary system.  
4. bean.  
5. excess salts – excess water – sweat.  
6. urine

- 2 (A) 1. Because they contain some poisonous materials that can harm the body.  
2. Because it stores the urine temporarily until it is released outside the body.

3. Because the secreting of sweat increases in summer due to the high temperature.
- (B) 1. the urinary system. 2. kidney.  
3. Urethra. 4. Urine

3. 1. Sweat. 2. Urinary system.  
3. Ureter. 4. Urinary bladder.  
5. Sweat glands.

- 4 (A) 1. The body will be poisoned by the poisonous excretory materials.  
2. The urine can't be stored until it is released outside the body.  
3. The blood will be poisoned with the waste materials as urea, uric acid and excess salts.
- (B) 1. c 2. b 3. a 4. e

- 5 (A) 1. The boy removes his sweat.  
2. some excess salts – excess water – sweat glands
- (B) 1. the urinary system.  
2. 1 – urine.  
3. 2 – 1  
4. 1 Kidney. 2 Ureter.  
3 Urinary bladder. 4 Urethra.

### Answers of Model Exam on unit 2

1. 1. carbon dioxide – oxygen  
2. fats – salts. 3. Ureter – urine  
4. plasma.  
5. the urinary system – skin – the two lungs.  
6. heart

2. 1. The pulmonary artery ...  
2. Urethra ...  
3. ... urine ...  
4. White blood cells ...  
5. Skin ...

- 3 (A) 1. The waste materials will harm the body causing poisoning.  
2. The blood can't carry oxygen gas that is necessary for all the body cells and also can't carry carbon dioxide that must be removed from the body cells.  
3. The urinary system will be harmed.



- (B) 1. - The odd word : Right atrium.  
- The name of the others :  
The components of the urinary system.  
2. - The odd word : Urinary bladder.  
- The name of the others :  
The components of blood.

- (A) 1. To maintain the circulatory system health.  
2. Because they are necessary in clotting blood and healing wounds.  
3. Because :  
- It transfers the materials to all the body cells.  
- It is necessary in the defence of the body against microbes.  
- It keeps the temperature of the body constant.

(B) Look at the main book on pages (52 & 53).

5. 1. a. two sides and four chambers.  
2. a. 1 million.  
3. b. away from the heart.  
4. a. Poisonous excretory materials  
5. a. bean

### Test yourself 7

1. 1. Soil 2. sand - humus - clay.  
3. sand - clay - minerals  
4. Humus 5. Soil 6. humus.  
2. (A) 1. Humus. 2. Soil. 3. Rocks.  
(B) 1. Due to the colour of humus which is dark brown or black.  
2. Because it is necessary for growth of plants, animals and human.

3. 1. d. all the previous answers.  
2. d. Humus. 3. d. (b) and (c).  
4. b. humus. 5. d. potatoes.

4. (A) 1. - The soil erosion occurs quickly.  
- The soil is poor in nutrients as humus isn't formed.  
- The soil particles are not cohesive.

2. Plants couldn't grow and there is no food for humans and some animals and there is no shelter for a lot of living organisms.  
(B) 1. Humus. 2. Particles of mud.  
3. Silt.  
4. Large particles of sand.  
5. Gravel.

(B) 1. Humus. 2. Particles of mud.

3. Silt.

4. Large particles of sand.

5. Gravel.

5. 1. (x) The colour ...  
2. (✓)  
3. (x) ... is dark brown or black.  
4. (x) ... sand, humus and clay.  
5. (x) ... the first layer is humus ...

6. (✓)

7. (x) ... is dark brown or black.

8. (x) ... sand, humus and clay.

9. (x) ... the first layer is humus ...

### Test yourself 8

1. 1. d. All the previous answers.  
2. b. the rocks of Ethiopian Plateau.  
3. d. (a), (b) and (c).  
4. a. they form tunnels that allow air, water and nutrients to pass easily through soil.  
5. b. flood water.

2. (A) 1. Because :  
- They help the soil to be cohesive.  
- They add nutrients to soil as they are converted into humus after death.  
- They prevent the soil erosion from happening quickly.  
2. Because they help in the growth of plant roots, as the tunnels that are formed by them allow air, water and nutrients to pass easily through soil, then to the plant roots.  
3. Because water rushing breaks down rocks into small pieces which form soil.

- (B) 1. When the rocks of Ethiopian Plateau exposed for millions of years to several factors (as heat, winds, rains and running water), they broken into small particles with different sizes and shapes.  
2. The flood water carried these particles to River Nile, then to Nile valley, where they are deposited year after year as layers of clay and silt.

3. 1. Lower soil layer 2. Ants - lay eggs.  
3. Winds 4. Clay - silt  
5. Roots of plants 6. Rocky layers  
7. Nile Valley. 8. Earthworms.

4. (A) 1. - They take water and nutrients from soil.  
- They fix the plant in the soil.  
2. When these organisms die, their bodies decay forming humus.  
3. They help in the growth of plant roots, because they make tunnels in the soil that allow air, water and nutrients to pass easily through soil, then to plant roots.  
(B) 1. Rocks are broken into small particles with different sizes and shapes.  
2. The soil will not be cohesive, soil erosion will happen quickly and the soil will be poor in humus.

5. (A) 1. Earthworm.  
2. The soil considered the shelter for this organism, because it makes the home underground by digging tunnels.  
3. the top soil layers.  
(B) 1. (x) 2. (x) 3. (x) 4. (x)

6. (x)

7. (x)

8. (x)

9. (x)

10. (x)

11. (x)

12. (x)

13. (x)

14. (x)

15. (x)

16. (x)

17. (x)

18. (x)

19. (x)

20. (x)

21. (x)

22. (x)

23. (x)

24. (x)

25. (x)

26. (x)

27. (x)

28. (x)

29. (x)

30. (x)

31. (x)

32. (x)

33. (x)

34. (x)

35. (x)

36. (x)

37. (x)

38. (x)

39. (x)

40. (x)

41. (x)

42. (x)

43. (x)

44. (x)

- Funnel in fig. (2) contains silt soil, because it has the medium drainage of water and the medium retention of water.  
- Funnel in fig. (3) contains clay soil, because it has the slowest drainage of water and the highest retention of water.

5. 1. (x) ... in sand soil.  
2. (x) The types of soil are three which are silt soil, sand soil and clay soil.  
3. (✓)  
4. (x) Silt soil is ...  
5. (✓)

### Test yourself 10

1. 1. sand - clay 2. great and fast - slow.  
3. silt - clay 4. silt  
5. sand - clay 6. Clay

2. (A) 1. Cotton. 2. Peanut 3. Potatoes.

- (B) - Fig. (1) represents silt soil.  
- Fig. (2) represents clay soil.  
- Fig. (3) represents sand soil.  
The soil which has the loose particles is the sand soil.

3. 1. Sand soil is weakly compacted, silt soil is moderately compacted and clay soil is highly compacted.  
2. Sand soil is good aerated, silt soil is medium aerated and clay soil is poor aerated.  
3. Sand soil has low water absorption, silt soil has medium water absorption and clay soil has high water absorption.

4. 1. a. Lemon. 2. c. Sand 3. b. silt  
4. c. Sand 5. d. Silt soil

5. (A) 1. Because the clay soil has the highest absorption of water than silt and sand soils  
2. Because sand soil is suitable for cultivation of plants that produce tubers.  
(B) 1. (x) 2. (x) 3. (✓)

6. (x)

7. (x)

8. (x)

9. (x)

10. (x)

11. (x)

12. (x)

13. (x)

14. (x)

15. (x)

16. (x)

17. (x)

18. (x)

19. (x)

20. (x)

21. (x)

22. (x)

23. (x)

24. (x)

25. (x)

26. (x)

27. (x)

28. (x)

29. (x)

30. (x)



## Part 2

2. chemical pesticides.
3. Natural – chemical
4. ground water – increasing in the soil salinity.
5. acidification – death

2 (A) 1. To feed on the agricultural pests and protect soil from pollution.

2. Because they contaminate plants as they leak into the soil and harm the human and animal health.

(B) 1. Chemical fertilizers

2. soil salinity.
3. Industrial wastes (acidic rains)

3 1. b. prevent soil salinity.

2. d. (a), (b) and (c).
3. b. natural fertilizers.
4. d. (a), (b) and (c).
5. c. Chemical pesticides

4 (A) 1. Rationalizing the use of chemical fertilizers and use the natural fertilizers.

2. Irrigating the agricultural lands regularly to prevent the soil dryness that increases the soil salinity.
3. Recycling the agricultural wastes to produce useful materials.

(B) 1. (✓) 2. (x) 3. (x) 4. (✓)

5 (A) 1. The plants are contaminated and the human and animals health will be harmed.

2. The soil salinity increases and this causes loss of the cultivated plants.
3. The soil is polluted and its living organisms will die and the health of human and animals is harmed.

(B) 1. Pollution. 2. Soil pollution.

## Answers of Model Exam on unit 3

1. d. has moderate percentage of humus.
2. a. Humus
3. c. using chemical fertilizers.
4. a. clay 5. b. natural fertilizers

Guide Answers  
of Final Exams3  
PART

Points of comparison	Clay soil	Silt soil	Sand soil
- Formation :	It is composed of many of clay and silt particles and a small amount of sand and humus.	It is composed of many of silt particles and a small amount of sand, clay and humus.	It is composed of many of sand particles and a small amount of clay and humus.
- Colour :	Black.	Grey.	Yellow.
- Size of Particles :	Small.	Medium.	Large.
- Compactness :	Very compacted.	Medium in compactness.	Weakly compacted.
- Drainage of water :	Low.	Medium.	High.
- Fertility :	Fertile.	High fertility.	Low in fertility.

3 (A) 1. Because they are used to compensate the poor soil with the required elements for plant growth.

2. Because they break down rocks into small pieces which form soil.
3. Because they take water and nutrients from soil and fix the plant in the soil.

(B) 1. clay soil

2. Industrial wastes
3. increases the soil salinity.

4 (A) Look at the main book on page (113)

- (B) 1. The soil is not suitable for cultivation.
2. Humus can't be formed and plants will die.

5 1. clay

2. feed on the agricultural pests.
3. Ants – other insects
4. The human wrong behaviour.
5. poorly – highly
6. Cactus – peanut – cotton





## Cairo Governorate

## Our lady of Perpetual Succor School

- 1 (A) 1. the pulmonary artery.  
2. plasma.  
3. the urinary system - the respiratory system.  
4. Urea - uric acid. 5. top.  
6. soil pollutants.

(B)

Points of comparison	Clay soil	Sand soil
1. Aeration	Poor.	Good.
2. Water drainage	Slow.	Fast and great.
3. The cultivated plants.	Cotton, sugar cane, wheat and many vegetables.	Potatoes, sweet potatoes, peanut and cactus.

- (C) 1. They allow the blood flow from the atrium to the ventricle and prevent its returning back.  
2. They transfer the excretory materials (urine) from the two kidneys to the urinary bladder.

- 2 (A) 1. The minor (pulmonary) blood circulation.  
2. Soil.  
3. Blood platelets.  
4. The Ethiopian plateau.  
5. Ball bearings.

- (B) 1. To increase the air resistance by increasing its surface area.  
2. Because they increase the soil acidification and deprive plants from the soil salts that are necessary for plant growth.  
3. To keep our urinary system healthy.

- 3 (A) 1. b. vena cava. 2. c. Left atrium.  
3. c. solid wastes.  
4. c. Oranges & lemon.  
5. b. clay.

- (B) 1. ① Aorta. ② Left atrium.  
③ Left ventricle. ④ Right ventricle.  
⑤ Venae cavae.  
2. heart.

- 4 (A) 1. dark (black). 2. humus.  
3. increases. 4. Urethra  
5. Aorta.

- (B) 1. The blood in the two sides of the heart will be mixed.  
2. The excretory materials will remain in the blood causing poisoning.  
3. We can't control the car speed and we can't change the car direction.

## Own Heliopolis Language School

- 1 (A) 1. The two ureters - urethra  
2. high - low.  
3. Running water - winds  
4. The speed of the moving body - the surface area of the moving body.

- (B) 1. Arteries. 2. Soil.  
3. White blood cells.  
4. Soil Pollution.

- (B) 1. sand. 2. Roots.  
3. Blood platelets. 4. The kidney.

- 3 (A) 1. (✓) 2. (x) 3. (✓)  
4. (x) 5. (x) 6. (✓)

- (B) 1. Because:  
- They cause the death of living organisms that live in soil.  
- They cause harm for humans and animals that feed on plants as chemical fertilizers leak to plants that grow in soil.  
2. Because the sweat consists of some excess salts and excess water.

- 4 (A) 1. c 2. d 3. b 4. a  
(B) 1. heart. 2. sugar cane.  
3. aorta artery. 4. red blood cells.

## Manor House International Schools

- 1 1. four - two  
2. Dead animals - remains - humus.  
3. Sweat.  
4. The minor (pulmonary) blood circulation.  
5. Sand.  
6. rough - decreases.  
7. urine.  
8. Top soil layers - lower soil layers - rocky layers.  
9. two kidneys - two ureters.

- 2 1. Red blood cells. 2. Top soil layer.  
3. plasma. 4. Sweat glands.  
5. Humus. 6. Friction force.  
7. Ureter. 8. Solid wastes.

- 3 (A) 1. b. small. 2. b. kidney.  
3. b. White blood cells.  
4. b. natural fertilizers.

- (B) 1. - They carry oxygen gas from the lungs to all the body cells.  
- They carry carbon dioxide gas from all the body cells to the lungs.  
2. It stores the urine temporarily until it is released outside the body through urethra.  
3. - It carries the needed food substances to the body cells.  
- It carries the harmful wastes that formed in the cells to another cells to get rid of them.

4. They reduce the friction force between the moving parts of machines.

- 3 (A) 1. Due to the colour of humus which is dark brown.  
2. To decrease the air resistance and consumption of fuel.

- (B) 1. They don't grow.  
2. The waste materials will harm the body causing poisoning.  
3. Smoking will harm the heart and weakens the blood circulation.

## Nasr City Zone Science Inspectorate

- 1 (A) 1. sweat. 2. Red.  
3. Aorta. 4. clay

- (B) 1. To allow the blood to pass from the atrium to the ventricle and not in the opposite direction.  
2. Because it is rich in humus.

- 2 (A) 1. c. Chemical pesticides  
2. b. Plasma. 3. a. Urethra.  
4. c. fat. 5. b. proteins.  
6. c. bean.

- (B) 1. They defend the body against microbes by attacking them.  
2. They are used to form a thin layer between the internal moving parts of machines to reduce the effect of the friction force.

- 3 (A) 1. Air resistance.  
2. The minor (pulmonary) blood circulation.  
3. Ventricles.  
4. The urinary bladder.  
5. Pulmonary artery.  
6. Blood platelets.

- (B) 1. (✓) 2. (x)

- 4 (A) 1. ureters. 2. four  
3. opposite direction 4. Sand

- (B) 1. The urinary system.  
2. ① Two kidneys. ② Two ureters.  
③ Urinary bladder.

## St. George's college

- 1 1. white blood cells - plasma.  
2. Rice - wheat.  
3. water resistance. 4. Kidneys.  
5. industrial wastes - chemical pesticides.  
6. valve. 7. clay - sand.  
8. Blood.



- 2 (A) 1. c. Ethiopian  
3. b. lungs.  
(B) 1. To allow the blood to deliver food and oxygen to the cell, then carry carbon dioxide and wastes.  
2. To decrease the water resistance.

- 3 (A) 1. (x) 2. (x) 3. (x)  
4. (x) 5. (✓) 6. (✓)  
(B) The soil salinity increases.

- 4 1. Atria.  
3. Plasma.  
2. Soil.  
4. Humus.

**Akhmaton Egyptian Lang. Sch.**

- 1 humus.  
2. Lubricants - oil  
3. trains - streamline  
4. wind.  
5. excess water - nitrogenous wastes  
6. opposite.  
7. sand - clay.  
8. food - oxygen.  
9. damage of moving parts of machines.  
10. air - water.

- 2 (A) 1. (✓) 2. (x) 3. (x) 4. (✓)  
(B) 1. a. plasma.  
3. a. aorta.  
2. c. lungs.  
4. c. sand.

- 3 (A) 1. Urinary bladder.  
2. Soil.  
3. Blood capillaries.  
4. Water resistance.  
5. Minor blood circulation.  
(B) 1. b 2. c 3. a

- 4 (A) 1. To increase the air resistance by increasing their surface area.  
2. Because they absorb water and nutrients from the soil and fix the plant in the soil.  
3. Because sweat consists of excess salts and excess water.  
4. To prevent mixing of blood in the two sides of the heart.

- (B) 1. They defend the body against microbes by attacking them.  
2. They filter the blood from urea, uric acid, excess salts and excess water.  
3. It is used between moving parts of machines to reduce the friction force.  
4. They help in the formation of blood clot on wounds.

**El-Gomhouria Lang. Sch.**

1. humus - clay.  
2. pulmonary veins - left atrium.  
3. urine - urinary bladder.  
4. sand - clay.

- 2 (A) 1. Red blood cells.  
2. Urine.  
3. Soil.  
4. Major blood circulation.

- (B) 1. The rate of heart beats will increase.  
2. The soil acidification increases and plants are deprived from the soil salts that are necessary for plant growth.

- 3 (A) 1. b. Blood.  
3. b. white blood cells.  
4. b. good.  
5. c. (a) and (b).

- (B) 1. They help in the formation of blood clot on wounds.  
2. They form humus when they decay after death.  
3. They decrease the friction force between the moving parts of machines.

- 4 (A) 1. all body cells.  
2. sand.  
4. dark brown.  
5. valve.

- (B) 1. To prevent mixing of blood in the two sides of the heart.  
2. To increase the air resistance by increasing its surface area.  
3. To avoid the soil dryness that increases the soil salinity.

**Al - Neel Lang. Sch.**

1. ventricle - valve.  
2. heart - all body parts.  
3. backbone.  
5. medium.  
4. Lubricants - oil

- 2 (A) 1. To allow the blood to deliver food and oxygen to the body cells and then carry carbon dioxide and wastes.  
2. To decrease the air resistance.  
3. To prevent mixing of blood in the two sides of the heart.  
(B) 1. (x) 2. (✓) 3. (x)  
4. (x) 5. (x)

- 3 1. Pulmonary artery.  
2. Blood platelets.  
4. Humus.  
6. Water resistance.  
7. Sand soil.  
3. Sweat glands.  
5. Soil.  
8. Urine

- 4 (A) 1. It carries food to the body cells and carries harmful wastes from the cells to get rid of them.  
2. They filter the blood from urea, uric acid, excess salts and excess water.  
3. They reduce the friction force between moving parts of machines.  
(B) 1. b. lungs.  
2. c. fist.  
3. c. using chemical fertilizers instead of natural fertilizers.  
4. a. clay  
5. b. Ethiopian

**Dar El-Hanan Lang. Sch.**

- 1 (A) 1. silt - sand - clay.  
2. pulmonary artery.  
3. kidneys.

- (B) 1. It stores the urine until it is released outside the body through urethra.  
2. - They carry oxygen from the lungs to all body cells.  
- They carry carbon dioxide from all body cells to the lungs.  
3. They absorb water and mineral salts from the soil and fix the plant in the soil.

**Giza Governorate**

**Egyptian International Sch.**

- 1 (A) 1. blood vessels.  
2. ureters - urinary bladder.  
3. air - fuel.  
4. deoxygenated - oxygenated.  
5. Silt - sand.  
6. Right.

- (B) 1. It is any change in the soil that disturbs its natural balance and harms its living organisms.  
2. It is a type of friction resulting from the moving of an object through the air.

- 2 1. a. Poisonous excretory materials.  
2. b. Left atrium.  
3. c. (a) and (b).  
4. c. Blood platelets.  
5. c. gravel.  
6. b. blood containing wastes.  
7. a. proteins.  
8. a. soil.

- 3 (A) 1. Ventricles.  
3. Major blood circulation.  
4. Sand soil.  
5. Plasma.  
6. Friction force.

- (B) 1. To squeeze water out, as water decreases friction that makes the control of the car is very hard.  
2. Because clay soil has the highest absorption of water than salt and sand soils.

- 4 (A) 1. (x) White blood cells .....  
2. (x) The pulmonary artery .....  
3. (✓)  
4. (x) ..... is called urethra.  
5. (x) ..... harm the circulatory system.  
6. (✓)

- (B) 1. It causes soil pollution.  
2. The blood in the two sides of the heart will be mixed.



- 2 (A) 1. small. 2. valve  
3. harm. 4. increase
- (B) 1. Because it harms the heart and weakens the blood circulation.  
2. Because the friction between them raises their temperature causing their damage.
- 3 (A) 1. d 2. c 3. e 4. b 5. a  
(B) 1. Vein. 2. Artery.  
3. Blood capillaries.
- 4 (A) 1. Blood platelets.  
2. Two kidneys.  
3. Friction force.
- (B) 1. I will slip down.  
2. The soil pollution will decrease.
- (C) 1. Rice. 2. Orange. 3. potatoes.

### Delta Lang. Sch.

- 1 (A) 1. White blood cells.  
2. arteries.  
3. Ureter.  
4. Silt soil.  
5. air resistance.
- (B) 1. It pumps the blood continuously throughout the body.  
2. It filters the blood from urea, uric acid, excess water and excess salts.  
3. They absorb water and nutrients from the soil and fix the plant in the soil.
- 2 (A) 1. b. Vein. 2. b. right ventricle.  
3. b. the car velocity increases.  
4. b. sweat. 5. b. good.
- (B) - Eat more fresh and clean vegetables and fruits.  
- Avoid smoking and smokers.  
- Eat healthy and balanced food.
- 3 (A) 1. (✓)  
3. (x) ..... rich in oxygen.  
3. (x) There are 3 layers .....  
4. (✓)  
5. (x) ..... through two lungs.

### Al-Agamy Zone Science Supervision

- 1 (A) 1. veins. 2. sand - clay  
3. urea - uric acid. 4. Acid rains.
- (B) 1. Because secreting sweat increases in summer due to the high temperature.  
2. To decrease water resistance.
- 2 (A) 1. (✓) 2. (x) 3. (x)  
4. (✓) 5. (x)
- (B) 1. It carries oxygenated blood from the heart (left ventricle) to all the body cells.  
2. They are used to decrease the friction force between the moving parts of machines.
- 3 (A) 1. b. small. 2. c. fat.  
3. c. Urinary bladder. 4. a. arteries.  
5. b. Soil
- (B) 1. The blood in the two sides of the heart will be mixed.  
2. The bean seeds will not grow.
- 4 (A) 1. Red blood cells. 2. Ureter.  
3. Humus. 4. Air resistance.  
(B) 1. the heart. 2. Right atrium.  
3. Left ventricle. 4. Wall.

### Qaliubya Governorate

### Resala Language School

- 1 (A) 1. friction  
3. clay - sand  
4. silt soil - sand soil - clay soil.
- (B) 1. Soil  
3. Chemical pesticides.  
4. Lungs. 5. Two kidneys.
- 2 1. Because friction force increases between rough surfaces and decreases between smooth surfaces.  
2. Because it has highly compacted particles.  
3. Because secreting sweat increases in summer due to the high temperature.

- (B) 1. It is any change in the soil that disturbs its natural balance and harms its living organisms.  
2. It is the blood circulation between the heart and the two lungs.
- 1 (A) 1. Ureter. 2. Vein.  
3. Large intestine. 4. Top soil layer.  
5. Aorta. 6. Air resistance.
- (B) 1. Sand soil - Silt soil - Clay soil.  
2. Clay soil - Silt soil - Sand soil.

### Berg El-Arab Educational Directorate

- 1 1. digested food - oxygen.  
2. blood clot - wound.  
3. silt. 4. backbone.  
5. four. 6. opposite.
- 2 (A) 1. Red blood cells.  
2. Minor blood circulation.  
3. Urine. 4. Humus.
- (B) 1. - They carry oxygen from lungs to all body cells.  
- They carry carbon dioxide from body cells to the lungs.  
2. They are used to decrease the friction force between the moving parts of machines.
- 3 (A) 1. a. Veins. 2. c. natural fertilizers.  
3. b. lungs. 4. a. white blood cells.
- (B) 1. To increase the air resistance by increasing its surface area.  
2. To allow the blood to pass from atrium to ventricle and not in the opposite direction.
- 4 (A) 1. (✓) 2. (x) 3. (✓)  
4. (x) 5. (x) 6. (✓)
- (B) 1. Humus. 2. Particles of clay.  
3. Large particles of sand.  
4. Gravel.

- (B) - Sand soil : Potatoes and peanut.  
- Silt soil : Lemon and orange.  
- clay soil : Cotton and rice.
- 1 (A) 1. Friction force.  
2. Urinary bladder.  
3. Soil.  
4. Plasma.  
5. Minor blood circulation.
- (B) 1. To allow the blood to pass from the atrium to the ventricle and not in the opposite direction.  
2. To avoid soil pollution.  
3. Because they dig tunnels in the soil that allow water, air and nutrients to pass through the soil.

### Alexandria Governorate

### Central Zone Science Inspection

- 1 (A) 1. veins - arteries.  
2. blood clot  
3. abdominal.  
4. chemical pesticides - chemical fertilizers - industrial wastes - increasing soil salinity.  
5. fast - slow.
- (B) 1. Water is trapped under the tires and the car can't be controlled.  
2. The blood will return back from ventricle to atrium during the contraction of the heart.
- 2 (A) 1. c. Urinary bladder.  
2. b. lungs.  
3. c. decrease air resistance.  
4. a. peanut plant  
5. c. blood with waste materials.  
6. a. increased
- (B) 1. To avoid the infection by schistosomiasis disease.  
2. To decrease the friction force between their moving parts.
- 3 (A) 1. Clay 2. urethra.  
3. oxygen. 4. White blood cells.  
5. Ethiopian. 6. yellow - black.



4. Because the skin gets rid of some excess salts and excess water in the form of sweat.

3. 1. (x) ..... a dark brown (black) material.  
2. (✓)  
4. (x) ..... the Ethiopian plateau.  
5. (x) ..... in sand soil.  
6. (✓)

4. (A) 1. a. Ureters.  
3. c. peanut  
5. a. clay  
(B) 1. Two kidneys.  
2. Ureters.  
3. Urinary bladder.  
4. Urethra.

### Sherkio Governorate

### Science Inspectorate

1. proteins.  
2. Red  
3. chemical pesticides  
4. clay.  
5. heart - blood vessels - blood.  
6. Sand soil.

2. (A) 1. Soil.  
3. Humus.  
4. Aorta.  
5. Blood capillaries

- (B) 1. To control the car speed and to change the car direction.  
2. Because the left ventricle pushes the blood to all the body parts, while the right ventricle pushes the blood to the two lungs only.

3. (A) 1. c. Potatoes.  
2. b. arteries.  
3. c. White blood cells  
(B) 1. four  
2. sweat  
3. decrease  
4. clay  
5. Kidneys

4. (A) 1. ① Kidney.  
② Urinary bladder.  
2. urinary

- (B) 1. The blood will return back from the ventricles to the atria during the contraction of heart (ventricles).  
2. It causes soil dryness and the soil salinity will increase.

### Menofia Governorate

### Shebeen El Koum Edu. Directorate

1. heart - fist.  
2. grooves - channels.  
3. ureter - urinary bladder.  
4. wind - water.

2. (A) 1. Ventricles.  
2. Soil.  
3. Sweat glands.  
4. Clay soil.  
5. Water resistance.  
6. Major blood circulation.

- (B) 1. It filters the blood from urea, uric acid, excess water and excess salts.  
2. They defend the body against microbes.

3. (A) 1. c. large.  
2. b. left atrium  
3. c. Ethiopian  
4. c. smoking.  
5. c. humus.  
6. lungs.

- (B) 1. It will push the blood rich in oxygen to all the body parts through aorta.  
2. Water is trapped under the tires and the car can't be controlled.

4. (A) 1. Because it is rich in humus.  
2. To avoid soil pollution.

- (B) 1. (✓)  
2. (x)  
3. (✓)  
4. (✓)  
5. (x)

### Dokkhi Governorate

### Education Directorate

1. (A) a. circulatory  
b. ① Valve.  
c. It separates the two sides of the heart to prevent mixing of blood inside the heart.  
d. Urinary system.  
e. ① Urinary bladder.  
② Urethra.  
f. It stores urine until it is released outside the body through urethra.

- (B) 1. It absorbs water and nutrients from the soil and fixes the plant in the soil.  
2. They are used to decrease friction force between moving parts of machines.

2. (A) 1. atria - ventricles.  
2. lungs - left atrium.  
3. metallic - smooth  
4. sand - clay

- (B) 1. (x)  
2. (x)  
3. (✓)  
4. (x)  
(A) 1. Minor blood circulation.  
2. Plasma.  
3. Blood capillaries.  
4. Soil.  
5. Humus.

- (B) 1. Due to the presence of a valve between each atrium and ventricle.  
2. To decrease air resistance.  
3. Because they filter the blood from urea, uric acid, excess water and salts.

4. (A) 1. More bleeding will occur when the body is wounded.  
2. The Soil salinity will increase.  
3. Machines will damage.

- (B) 1. Avoid smoking and smokers.  
2. Eat healthy and balanced food.

(C)

Points of comparison	Sand Soil	Silt Soil
Size of particles :	Large	Medium
Colour :	Yellow	Gray
Aeration :	Good	Medium

### Ghorbia Governorate

### Central Science Supervision

1. (A) 1. colour - texture  
2. Surface area of moving object - speed of moving object.  
3. urea - uric acid.  
4. humus - clay.  
5. chest - two lungs.

- (B) 1. To increase air resistance by increasing its surface area.

### Guide Answers of Final Exams

2. Because it gets rid of excess water and excess salts in the form of sweat.  
3. Because it is highly compacted particles.

2. (A) 1. Excretion process.  
2. Humus.  
3. Blood vessels.  
4. Silt soil.  
5. Water resistance.

- (B) 1. They defend the body against microbes.  
2. They filter the body from urea, uric acid, excess water and excess salts.  
3. They are used to decrease the friction force between the moving part of machines.

3. (A) 1. c. medium.  
2. a. Blood.  
3. c. Ethiopian.  
4. a. urine.  
5. c. natural fertilizers.

- (B) 1. The friction force will increase.  
2. Humus can't be formed and plants will die.  
3. The urinary system will be harmed and the functions of the kidneys will be affected.

4. (A) 1. sand  
2. large intestine.  
3. pulmonary veins.  
4. top  
5. increases

- (B) 1. Urinary system.  
2. ① kidney.  
② ureter.  
③ Urinary bladder.  
④ Urethra.

### Ismailia Governorate

### Science Inspectorate

1. (A) 1. ① Right atrium.  
② Wall.  
③ Left ventricle.

2. It separates the two sides of the heart to prevent mixing of blood inside the heart.  
3. Because it pumps the blood to all parts of the body through aorta.



(B)

Points of comparison	Sand soil	Clay soil
Size of particles:	Large	Small
Colour:	Yellow	Black
Compactness:	Loose	Hard

- (A) 1. Kidneys.  
2. Acidic rains.  
3. Soil.

(B) 1. The urinary system will be harmed and the functions of the kidneys will be affected.  
2. The car can't be controlled.

- (C) 1. Because it gets rid of excess water and excess salts in the form of sweat.  
2. To decrease the water resistance.

- (A) 1. Sand - humus  
2. Ureter - urinary bladder.  
3. heart - blood

- (B) 1. Rice.  
2. Orange.  
3. Potatoes.

- (C) 1. It filters the blood from urea, uric acid, excess water and excess salts.  
2. It allows the blood to pass from atrium to ventricle and not in the opposite direction.

- (A) 1. b. lungs.  
2. d. decrease air resistance.  
3. c. large intestine.  
4. b. pulmonary artery.

- (B) 1. b 2. d 3. a 4. c

#### Port-Said Governorate

#### 21 Lycee Al - Harreya School

1. While  
2. Friction force.  
3. The two kidneys  
4. carbon dioxide - oxygen  
5. winds.  
6. sand soil - clay soil.

- (A) 1. Urine.  
2. Ball bearing.  
3. Plasma.  
4. Soil.  
5. Humus.

- (B) 1. To avoid the soil dryness that increases the soil salinity.  
2. To allow the blood to pass from the atrium to the ventricle and not in the opposite direction.  
3. To allow the blood to deliver food and oxygen to the cells, then carry carbon dioxide and wastes.

- (A) 1. a. arteries.  
2. b. lungs.  
3. c. Ethiopian  
4. b. small.

(B) Soil is made of many components as :  
- Pieces of rocks (that composed of sand, clay, minerals and gravel).  
- Water. - Air. - Salt. - Humus.

1. The urinary system.  
2. ① Two kidneys.  
② ureter.

- ③ Urinary bladder.

#### Damiella Governorate

#### 22 Educational Directorate

- (A) 1. excess water - nitrogenous wastes.  
2. air - humus.  
3. digested food - oxygen  
4. air resistance. 5. pulmonary artery

- (B) 1. The blood will return back from the ventricles to the atria during the contraction of the heart (ventricles).  
2. The body doesn't move.

- (C) 1. They defend the body against microbes by attacking them.  
2. It gets rid of excess salts and some excess water in the form of sweat.

- (A) 1. Soil pollution. 2. Pulmonary veins.  
3. The two ureters.  
4. The major (systemic) blood circulation.  
5. Blood capillaries.

- (B) 1. Because it is rich in humus.  
2. To reduce the water resistance by decreasing its surface area.  
3. To prevent the mixing of blood in the two sides of the heart.

- (A) 1. b. lungs.  
2. c. aorta.  
3. a. good.  
4. a. blood platelets.  
5. d. all the previous.

- (B) 1. Potatoes.  
2. Strawberry.  
3. Cotton.

- (A) 1. industrial wastes.  
2. opposite direction  
3. roots  
4. oxygen.  
5. Pure blood.  
6. increases

- (B) 1. Drink appropriate (suitable) amounts of clean water daily especially in summer.  
2. Eat healthy and balanced food that is low in fat and salt.

#### El-Behiero Governorate

#### 23 Science Inspectorate

- (A) 1. deoxygenated - oxygenated  
2. sand soil - silt soil - clay soil.  
3. natural - chemical  
4. winds.

- (B) 1. a. peanut plant  
2. a. proteins.  
3. a. opposite to  
4. b. oxygen and carbon dioxide.

- (A) 1. They are network of tiny blood vessels with very thin walls.  
2. It is the friction force resulting from the movement of any object through water.

- (B) 1. Because clay soil has the highest absorption of water than sand soil.  
2. Due to the presence of a valve between each atrium and ventricle.  
3. To decrease the air resistance and consumption of fuel.

4. Because sweating increases in summer due to the high temperature.

- (A) 1. Soil.  
2. Lungs.  
3. The major (systemic) blood circulation.  
4. Plasma.

- (B) 1. Humus can't be formed and plants will die.

2. The water is trapped under tires and the car can't be controlled.  
3. The skin can't excrete some of the excess salts and water in the form of sweat.  
4. The blood in the two sides of the heart will be mixed.

- (A) 1. Ethiopian.  
2. backbone.  
3. ventricles.  
4. White blood cells.  
(B) 1. They filter the blood from some wastes as urea, uric acid, excess salts and other waste materials.  
2. They are used to form a thin layer between the internal moving parts of machines to reduce the effect of the friction force.

- (C) 1. The urinary system.  
2. ① Kidney. ② Ureter.  
③ Urinary bladder.  
3. It stores the urine temporarily until it is released outside the body through urethra.

#### Fayoum Governorate

#### 24 Governmental Language Schools Administration

1. the heart - blood.  
2. more - sand.  
3. abdominal - the backbone.  
4. opposite.  
5. winds.

- (A) 1. c. fist.  
2. d. Ethiopian.  
3. a. lungs.  
4. d. (a) and (b).  
5. b. veins.  
6. a. clay

- (B) 1. - They carry oxygen gas from the lungs to all the body cells.  
- They carry carbon dioxide gas from all the body cells to the lungs.  
2. It stores the urine temporarily until it is released outside the body through urethra.

- (A) 1. Humus.  
2. The major (systemic) blood circulation.  
3. Friction force. 4. The urinary system.  
(B) 1. b 2. a 3. o 4. c



- 1 (A) 1. (x) 2. (✓) 3. (x)  
4. (✓) 5. (x) 6. (x)

(B) 1. To decrease (reduce) the friction force.  
2. Because secreting sweat increases in summer due to the high temperature.

**Beni-Suef Governorate**

**25 Educational Directorate**

1. silt - clay.  
2. Lubricants - oil  
3. Running water - winds  
4. white blood cells - plasma

1. Friction force.  
2. The heart.  
3. The minor (pulmonary) blood circulation.  
4. Humus.

1. White blood cells  
2. clay  
3. increases  
4. Urethra

1. a. peanut plant  
3. c. Ethiopian  
5. b. kidneys

(B) 1. Because :  
- They cause the death of living organisms that live in soil.  
- They cause harm for humans and animals that feed on plants as chemical fertilizers leak to plants that grow in soil.  
2. To prevent the mixing of blood in the two sides of the heart.  
3. Because the sweat consists of some excess salts and excess water.

**Assiut Governorate**

**28 Gamal Abd Elnasser Language School**

- 1 (A) 1. Because it contains plasma which is a watery fluid.  
2. Because it carries the blood from the heart to all the body parts.  
3. To increase the air resistance by increasing its surface area.  
4. As it provides the soil with nutrients.

(B) 1. Technicians put it between the internal moving parts of machines to reduce the friction force.  
2. It stores the urine temporarily until it is released outside the body through urethra.

- 2 (A) 1. Soil.  
3. Red blood cells.  
5. Soil Pollution.

- (B) 1. Kidney.  
3. Urinary bladder.

- 3 (A) 1. c. lungs.  
3. a. Cotton.  
5. b. Ureter

2. a. Sand.  
4. b. Left atrium  
6. a. Sweat glands

(B) - The minor blood circulation is the blood circulation between the heart and the two lungs.  
- The major blood circulation is the blood circulation between the heart and all the parts of the body.

- 4 (A) 1. four - blood.  
3. white blood  
5. sand - clay.

(B) 1. It is the friction force resulting from the movement of solid objects through air.  
2. It is the decayed remains of animals mixed with the soil components and its colour is dark brown or black.  
3. They are small cell fragments (parts) that help in blood clotting.

**Sohag Governorate**

**27 Educational Directorate**

- 1 (A) 1. (x) 2. (x) 3. (x) 4. (x)  
(B) 1. c 2. d 3. b 4. a

- 2 (A) 1. ① Kidney.  
③ Urinary bladder.  
2. urinary.

- (B) 1. c. medium.  
3. a. arteries.  
2. b. kidneys.  
4. c. Ethiopian.

**South Sinai Governorate**

**28 Tur Sinai Directorate**

- 1 (A) 1. sand. 2. Right. 3. Sand - clay.  
4. The speed of the body - the surface area of the body.

(B) 1. To increase the air resistance by increasing its surface area and accordingly the falling speed decreases.  
2. Because :  
- They help in the growth of plant roots as the tunnels that are formed by them allow air, water and nutrients to pass through soil, then to the plant roots.  
- When they die, their bodies decay forming humus.

- 2 (A) 1. (x) ..... is large.  
2. (x) The skin excretes .....  
3. (x) Clay soil .....  
4. (✓)  
5. (x) The two kidneys .....

(B) 1. The soil salinity increases.  
2. The rate of the heartbeats will increase.  
(C) 1. Drink suitable amounts of clean water daily especially in summer.  
2. Eat balanced healthy food that is low in salt.

- 3 (A) 1. c. Silt. 2. b. lungs. 3. a. clay  
4. c. fruits. 5. a. urinary

(B) 1. They are used to form a thin layer between the internal moving parts of machines to reduce the effect of the friction force.  
2. They allow the blood to flow from the atrium to the ventricle and prevent its returning back.

(C) - Clay soil : Highly compacted.  
- Sand soil : Weakly compacted.

- 3 (A) 1. Soil.  
2. The major (systemic) blood circulation.  
3. Chemical pesticides.  
4. Humus.

(B) 1. To reduce the water resistance by decreasing its surface area.  
2. Because it is rich in humus.

- 4 1. Right.  
3. urea - uric.  
2. clay - sand.  
4. water - silt-humus.

**Luxor Governorate**

**28 Educational Directorate**

1. veins  
3. opposite  
5. Ureter - urinary bladder.  
6. Ants - insects

2 (A) 1. The rate of heartbeats will increase.  
2. The urinary system will be harmed and the functions of the kidneys will be affected.  
3. The soil dryness and the soil salinity increase.  
4. This will harm the urinary system and the two kidneys.

- (B) 1. wind  
3. The lungs  
2. heart  
4. carbon dioxide

- 3 (A) 1. Humus.  
3. White blood cells.  
4. Friction force. 5. plasma.

(B) Gravel / sand / silt / mud / humus.

- 4 (A) 1. To allow the blood to deliver food and oxygen to the cells, then carry carbon dioxide and wastes.  
2. To decrease the air resistance and consumption of fuel.

(B) 1. Drink suitable amounts of clean water daily especially in summer.  
2. Eat balanced healthy food that is low in salt.  
3. Keep away from irrigation canals to avoid schistosomiasis disease.  
4. Don't keep urine for a long periods because this affects the function of kidneys.



## NOTES

- 1 (A) 1. Air resistance. 2. Plasma.  
3. The minor (pulmonary) blood circulation.  
4. Soil. 5. Humus.

(B)	Arteries	Veins
	1. Carry blood from the heart to all the body parts.	1. Carry blood from all the body parts to the heart.
	2. Carry blood rich in oxygen.	2. Carry blood rich in carbon dioxide.

- 1 (A) 1. Silt soil.  
2. The minor (pulmonary) blood circulation.  
3. Soil pollution. 4. Humus.

- (B) 1. c. 2. d. 3. b. 4. a

Red sea Governorate

Science Supervision

- 1 (A) 1. Silt - humus.  
2. four.  
3. Ureter - urinary bladder.  
4. urea - uric acid. 5. sand.

- (B) 1. Because it is rich in humus.  
2. To allow the blood to pass from the atrium to the ventricle and not in the opposite direction.

3. Because :  
- They cause the death of living organisms that live in soil.  
- They cause harm for humans and animals that feed on plants as chemical fertilizers leak to plants that grow in soil.

- 2 (A) 1. (x) 2. (✓) 3. (✓)  
4. (✓) 5. (✓) 6. (x)

- (B) 1. Technicians put it between the internal moving parts of machines to reduce the friction force.  
2. They defend the body against microbes by attacking them.

- 3 (A) 1. b. proteins. 2. c. fist.  
3. b. right ventricle 4. c. blood platelets.  
5. c. Ethiopian. 6. b. medium.

- (B) - They help in the growth of plant roots as the tunnels that are formed by them allow air, water and nutrients to pass through soil, then to the plant roots.  
- When they die, their bodies decay forming humus.







EL-MORSSER

SERIES



5<sup>th</sup>  
PRIMARY  
2022  
SECOND TERM

# SCIENCE

Guide Answers

By A Group of Supervisors



## Unit One

## Lesson 1

1. a. friction force 2. c. Friction force  
3. a. opposite to  
4. d. all the previous answers.  
5. b. the friction force between the two bodies is smaller than the movement force.  
6. d. (a), (b) and (c).  
7. a. increases. 8. d. (a) and (b).  
9. a. increases.  
10. a. the friction force.  
11. b. in the opposite direction  
12. b. the car velocity increases.  
13. d. decrease air resistance.  
14. d. (a) and (b).  
15. a. a direct relation between them.  
16. b. to decrease air resistance.  
17. b. increases.  
18. d. (a), (b) and (c).  
19. c. Water resistance  
20. b. decreases.  
21. d. (a) and (b).
2. 1. (x) .... in the opposite direction ....  
2. (✓) 3. (✓)  
4. (x) .... at the opposite direction.  
5. (x) .... on the surface area of ....  
6. (x) .... increases. 7. (✓)  
8. (x) .... increases .... and decreases ....  
9. (x) .... depends on the type of the materials surface, speed of the moving object and the surface area ....  
10. (✓) 11. (x) .... through air.  
12. (x) .... increases ....  
13. (x) .... of its movement increased.  
14. (✓)  
15. (x) .... have streamline shapes.  
16. (x) .... increase air resistance.  
17. (x) .... air resistance increases.  
18. (x) .... in the opposite direction ....  
19. (x) .... decreases water resistance.  
20. (✓)
3. 1. Friction force. 2. Friction force.  
3. Friction force. 4. Air resistance.  
5. Air resistance. 6. Direct relation.  
7. Water resistance. 8. Water resistance.  
9. Water resistance.

4. 1. friction 2. friction force.  
3. friction force. 4. opposite  
5. the friction force. 6. a friction force  
7. the friction – the movement  
8. friction force.  
9. The type of the material surface – the surface area of the moving object  
10. Friction force 11. rough – decreases  
12. friction force 13. air resistance.  
14. opposite direction 15. increases.  
16. decreases  
17. air resistance.  
18. trains – aircrafts – decrease air resistance.  
19. streamline shapes  
20. surface area – air resistance.  
21. water resistance.  
22. opposite 23. water resistance.  
24. water resistance.  
25. Surface area of moving body – speed of moving body  
26. decrease water resistance.  
27. water resistance

5. 1. Due to the effect of friction force that arises when the toy car touches the floor.  
2. Due to the increase in the friction force.  
3. Because by increasing the surface area of the moving object, the friction force increases and vice versa.  
4. Because the friction force increases between the rough surfaces and decreases between the smooth surfaces.  
5. Because the friction force increases between the rough surfaces and decreases between the smooth surfaces.  
6. Because the friction force decreases between the smooth surfaces and increases between the rough surfaces.  
7. Because by increasing the speed of the body, the air resistance increases and vice versa.  
8. & 9. To decrease surface area, so the air resistance decreases, and the speed increases.  
10. To increase the air resistance by increasing its surface area, so the landing speed decreases.  
11. To increase the air resistance by increasing its surface area, so the landing speed decreases.

12. To decrease the surface area, so that the water resistance decreases and the speed increases.  
13. Because the relation between the speed of the moving object and the water resistance is a direct relation.  
14. Because they act in the opposite direction of the movement.

6. 1. The speed of the bike decreases gradually until it stops due to the friction force.  
2. The friction force increases.  
3. The air resistance increases.  
4. The water resistance increases.

7. On a glass surface, because it is a smooth surface, so the friction force decreases.

8. The folded paper reaches the ground first, because it has a surface area smaller than the unfolded paper, so the air resistance that opposes it is smaller than that opposes the unfolded paper.

9. 1. It is the force between two surfaces in contact that acts in a direction opposite to the direction of motion and causes the object to slow down and stop.  
2. It is a type of friction force resulting from the movement of an object through air.  
3. It is a type of friction force resulting from the movement of an object through water.

## Timss Questions

1. Because :  
– In fig. (1), the friction force is larger than the movement force.  
– In fig. (2), the friction force is smaller than the movement force.
2. 1. Due to the effect of the friction force.  
2. The friction force acts in the opposite direction of the movement force.

Air resistance	Water resistance
Fig. (b)	Fig. (a)
Fig. (c)	Fig. (d)
Fig. (e)	Fig. (f)

4. 1. In figure (A), because in figure (A) the whole surface of the base of the box touching the ground but in figure (B) the surface of wheels only touching the ground.  
2. b. less friction.

5. d. (b) and (c).

## Lesson 2

1. 1. d. it damages the internal moving parts of machines.  
2. c. slipping down.  
3. c. friction force.  
4. d. (a), (b) and (c).  
5. d. all the previous answers.  
6. a. it causes damages for machines.  
7. c. continuous cooling

2. 1. (x) Friction is necessary ...  
2. (✓) 3. (✓) 4. (✓)  
5. (✓) 6. (✓)  
7. (x) Machines must be cooled ...

3. 1. Friction force. 2. Friction force.  
3. Friction force. 4. Friction force.

4. 1. Friction force – direction.  
2. Friction force 3. Lighting a match  
4. friction 5. Damage of machines  
6. friction force. 7. friction  
8. cooling

5. 1. To control the car speed and to change the car direction.  
2. Because friction generates heat, that allows the match to heat up and start burning.  
3. Because it causes damage for the internal parts of machines, so a lot of money is wasted.  
4. Because the friction between them raises their temperature up to more than a certain limit causing their damage.  
5. Because the friction between their moving parts raises their temperature so, they must be cooled to protect them from damage.



6. 1. We can't control the car speed and we can't change the car direction.  
2. I can't walk and I will slip down.  
3. The friction arises between its moving parts and their temperature increases causing damage of machines and losing a lot of money.  
4. Machines are damaged.

### 7. Look at the main book on pages (29&30)

8. The temperature rises up to more than a certain limit, the moving parts of machines are damaged and a lot of money is wasted.

### Timss Questions

1. 1. (B) – (A)  
2. streamline – air resistance
2. 1. Air resistance. 2. friction – shoes
3. Due to the effect of the friction force between its moving parts.

### Project On UNIT ONE Answer by Yourself

## Unit Two

### Lesson 1

1. 1. c. stomach. 2. d. fist.  
3. b. strong hollow 4. b. wall  
5. a. arteries. 6. a. Veins  
7. b. Veins 8. a. Arteries  
9. a. red blood cells.  
10. c. carrying oxygen.  
11. b. white blood cells.  
12. a. plasma. 13. b. Plasma  
14. b. Red blood cells 15. d. Blood platelets  
16. d. (a), (b) and (c). 17. b. Left atrium  
18. b. right ventricle  
19. a. venae cavae.  
20. c. left ventricle. 21. d. all body cells.  
22. d. All answers are correct.  
23. c. eating more fats.
2. 1. d 2. e 3. b 4. a
3. 1. (✓)  
2. (x) .... inside the chest cavity.  
3. (✓) 4. (✓) 5. (✓)  
6. (x) .... carrying the blood from the heart to all the body parts. 7. (✓)  
8. (✓) 9. (x) .... veins.  
10. (✓)  
11. (x) .... without nuclei. 12. (✓)  
13. (x) .... plasma.  
14. (x) Blood platelets .... 15. (✓)  
16. (x) The pulmonary artery .... 17. (✓)  
18. (x) .... to the left atrium.  
19. (x) .... drink suitable amounts of water ....  
20. (x) .... harm the circulatory system.
4. 1. The circulatory system.  
2. The heart. 3. Ventricles.  
4. Valve. 5. Blood vessels.  
6. Blood capillaries. 7. Veins.  
8. Blood capillaries. 9. Pulmonary artery.  
10. Red blood cells. 11. White blood cells.  
12. Blood platelets. 13. Plasma.  
14. Plasma. 15. Blood platelets.  
16. Blood. 17. Aorta.  
18. Left atrium. 19. Venae cavae.  
20. Left ventricle.

## Answers of the Main Book

5. 1. heart – blood – blood vessels.  
2. digested food – oxygen gas  
3. two lungs. 4. heart  
5. blood – blood vessels.  
6. two – atrium – ventricle.  
7. valve 8. ventricle – valve.  
9. blood vessels.  
10. arteries – veins – blood capillaries.  
11. arteries.  
12. the heart – all the body parts.  
13. veins. 14. Arteries – veins  
15. blood capillaries. 16. veins – arteries.  
17. red blood cells – blood platelets – plasma.  
18. Red 19. White  
20. Red blood cells – white blood cells  
21. blood clots 22. Blood  
23. atrium – pulmonary veins.  
24. Pulmonary artery  
25. Right – the pulmonary artery.  
26. aorta. 27. 70 beats  
28. pushing blood 29. increases.  
30. heart muscle – blood circulation.
6. 1. Because it transports oxygen, digested food and water to all the body cells and transports the wastes to special organs to get rid of them.  
2. To prevent the mixing of blood in the two sides of the heart.  
3. Due to the presence of one way valve between each atrium and ventricle.  
4. Because the left ventricle pushes the blood to all the body parts, while the right ventricle pushes the blood to the two lungs only.  
5. To allow the blood to pass from atrium to ventricle and not in the opposite direction.  
6. To allow the blood to deliver digested food and oxygen to the cells, then carry carbon dioxide and wastes away from the cells.  
7. Because it carries the blood from the heart to all the body parts.  
8. Because it contains plasma which is a yellow watery fluid.  
9. Because they carry oxygen from the lungs to all the body cells and carry carbon dioxide from the cells to the lungs.
10. Because they coagulate blood (form blood clot) to prevent bleeding when the body is wounded.  
11. Because it carries the needed digested food substances to the cells and carries the harmful wastes that formed in the cells to another cells to get rid of them.  
12. Because they defend the body against microbes.  
13. Because it is necessary for :  
– The transfer of materials to all the body cells.  
– The defence and protection of the body.  
– Keeping the temperature of the body constant.  
14. To strengthen the heart muscle and to activate the blood circulation.  
15. Because it harms the heart and weakens the blood circulation.  
16. Because it harms the heart and weakens the blood circulation.  
17. To keep our circulatory system healthy.
7. 1. The blood in the two sides of the heart will be mixed.  
2. The blood will return back from the ventricles to the atria during the contraction of (ventricles) heart.  
3. The blood can't deliver digested food and oxygen to the cells and can't carry carbon dioxide and wastes away from the cells.  
4. When the body is wounded, bleeding can not stop.  
5. The white blood cells will attack these microbes.  
6. The blood platelets will form blood clot to prevent bleeding.  
7. It will push the blood to all the body parts through aorta.  
8. The rate of your heartbeats will increase.  
9. Smoking will harm his heart and weakens the blood circulation.
8. 1. – It transports the digested food, oxygen and water to all body cells.  
– It transports wastes formed in the cells to special organs to get rid of them.  
– It helps in maintaining the body healthy.  
2. It pumps the blood continuously throughout the body.  
3. It allows the blood to flow from the atrium to the ventricle and prevents it from returning back.



4. It prevents the mixing of blood in the two sides of the heart.
5. They carry the blood from all the body parts to the heart.
6. They transport blood from the heart to all the body parts.
7. - They connect the ends of arteries and the beginnings of veins.  
- Their thin walls allow blood to deliver food and oxygen to the cells and to carry carbon dioxide and wastes away from them.
8. - They carry oxygen from the lungs to all the body cells.  
- They carry carbon dioxide from the body cells to the lungs.
9. They defend the body against microbes.
10. They help in coagulation of blood (formation of blood clot) so they help in healing wounds.
11. - It carries the needed digested food substances to the body cells.  
- It carries the harmful wastes that formed in the cells to another cells to get rid of them.
12. - The transfer or delivery of materials to all the body cells.  
- The defence and protection of the body.  
- Keeping the temperature of the body constant.
9. 1. It is a yellow watery fluid in which all the blood components are suspended.  
2. The paths of blood throughout the body.

10. 1. Look at the main book on page (42).  
2.

Points of comparison	Red blood cells	White blood cells	Blood platelets
- Definition :	They are red cells without nuclei.	They are white cells with different forms of nuclei.	They are small cell fragments.
- Function :	<ul style="list-style-type: none"> <li>They carry oxygen gas from lungs to all body cells.</li> <li>They carry carbon dioxide gas from all body cells to lungs.</li> </ul>	They defend the body against microbes.	They help in coagulation of blood, so they help in healing wounds.

11. a. ① Red blood cells. ② White blood cells.  
③ Blood platelets. ④ Plasma.  
b. Plasma.  
c. • Component number ① :  
- They carry oxygen gas from the lungs to all the body cells.  
- They carry carbon dioxide gas from the body cells to the lungs.  
• Component number ② :  
They defend the body against microbes.
12. 1. Pulmonary artery. 2. Aorta.  
3. Right atrium. 4. Superior vena cava.  
5. Pulmonary veins. 6. Left atrium.  
7. Right ventricle. 8. Valve.  
9. Left ventricle.
13. a. blood vessels.  
b. artery - heart - all the body parts.  
c. blood capillaries - allow blood to deliver digested food and oxygen to the body cells, and carries carbon dioxide and wastes out of the body cells.  
d. vein - all body parts - heart.

### Timss Questions

1. 2. ③ 3. ④ 4. ⑤ 5. ①  
6. ① 7. ② 8. ③ 9. ④
2. d. His pulse rate returned to normal in less than 6 minutes.
3. c. White blood cells.
4. d. Blood vessel ① is artery and blood vessel ② is vein.

### Lesson 2

1. 1. c. Solid wastes 2. d. solid wastes.  
3. a. proteins. 4. b. lungs.  
5. d. kidneys. 6. d. blood capillaries.  
7. d. (a) and (b). 8. a. urine.  
9. c. Sweat gland 10. a. skin.  
11. a. The urinary 12. b. abdominal  
13. d. gall bladder. 14. a. Two kidneys  
15. c. urinary 16. a. bean  
17. b. Ureter 18. c. Urinary bladder  
19. d. Urethra 20. a. Schistosomiasis  
21. b. urinating in irrigation canals.

2. 1. c 2. d 3. a 4. b
3. 1. (✓)  
2. (x) .... through the two lungs ....  
3. (✓) 4. (✓)  
5. (x) .... are called sweat.  
6. (✓) 7. (✓)  
8. (x) .... through the two kidneys (the urinary system)  
9. (✓)  
10. (x) The urinary system consists of ....  
11. (x) .... both sides of the backbone.  
12. (x) .... in the form of urine.  
13. (x) .... from the human's blood.  
14. (x) .... a bean ....  
15. (x) .... through an artery.  
16. (x) .... called ureters.  
17. (x) Urethra is ....  
18. (✓)  
19. (x) .... less salt .... 20. (✓)  
21. (x) .... it harms ....

4. 1. The excretory system.  
2. Excretory materials (cell wastes).  
3. Solid wastes.  
4. Carbon dioxide and water vapour  
5. Sweat glands. 6. Skin.  
7. Sweat.  
8. The two lungs.  
9. The urinary system.  
10. Urine. 11. Kidneys.  
12. Ureter. 13. Ureter.  
14. Urinary bladder. 15. Urethra.  
16. Artery. 17. Vein.
5. 1. Excretory materials - solid wastes  
2. Solid wastes 3. excretory materials  
4. harmless - poisonous  
5. poisonous  
6. Carbon dioxide gas - water vapour  
7. Urea - uric acid - nitrogenous wastes.  
8. the blood capillaries. 9. the two lungs.  
10. urinary  
11. skin - the two lungs.  
12. the urinary system - skin.  
13. some excess salts and excess water - sweat.  
14. abdominal  
15. urea - uric acid - some excess salts.

16. urinary - two kidneys - two ureters  
17. The two kidneys 18. backbone.  
19. Kidney 20. urine.  
21. Ureter - the urinary bladder.  
22. urethra. 23. bean  
24. artery - vein. 25. one million  
26. urinary bladder 27. urethra.  
28. urea - uric acid.  
29. water - summer. 30. schistosomiasis
6. 1. Because the excretory materials contain poisonous materials that the body must get rid of them, and other harmless materials that the body can't use them.  
2. Because the blood carries these wastes to special organs that get rid of them.  
3. Because faeces is an indigested food that stored in the large intestine until it passes out of the body.  
4. Because the skin gets rid of some excess salts and excess water in the form of sweat.  
5. To get rid of some excess salts and excess water in the form of sweat.  
6. Because the sweat consists of some excess salts and excess water.  
7. Because secreting sweat increases in summer due to the high temperature so, the amount of urine decreases.  
8. Because :  
- It filters the blood from some excess salts, urea, uric acid and other waste materials.  
- It expels these wastes outside the body in the form of urine.  
9. Because they filter the blood from the excretory materials which contain poisonous materials.  
10. To transfer the urine from the two kidneys to the urinary bladder.  
11. To store the urine temporarily until it is released outside the body.  
12. To keep the kidneys or the urinary system healthy.  
13. To avoid the infection by schistosomiasis disease.  
14. To keep your urinary system healthy as this affects the function of kidneys.
7. 1. The waste materials will harm the body causing poisoning.  
2. The skin can't excrete some of the excess salts and water in the form of sweat.



3. The excretory materials will remain in the blood causing poisoning.
  4. The urine can't be transferred from the two kidneys to the urinary bladder.
  5. We couldn't store urine until releasing it outside the body.
  6. The urinary system will be harmed and the functions of the kidneys are affected.
  7. This will harm the urinary system and the two kidneys.
  8. The urinary system will be harmed.
8. 1. It contains sweat glands which get rid of some excess salts and excess water in the form of sweat.
2. - It filters the blood from urea, uric acid, some excess salts and other waste materials.
  - It gets rid of these wastes in the form of urine.
3. It transfers the urine from the kidney to the urinary bladder.
  4. It stores the urine temporarily until it is released outside the body.
  5. It allows the urine to pass outside the body.
9. 1. It is a group of organs that help the body to get rid of wastes produced from the breaking down of digested food inside the body cells.
2. They are the indigested food stored in the large intestine until they pass out of the body.
  3. They are the waste materials that produced inside the body cells and the body must get rid of them.
  4. They are the excretory materials that produced from breaking down of proteins that produces urea and uric acid.
  5. It is the system that clarifies blood from (gets rid of) the nitrogenous wastes, excess salts and excess water.
  6. They are bean-shaped organs located on both sides of the backbone.
  7. They are two narrow tubes that connect the two kidneys to the urinary bladder.
  8. It is a balloon like sac that receives the urine from the two ureters.
  9. It is a tube which extends from the urinary bladder and opens outside the body.

10. 1. - Carbon dioxide is produced from burning of the digested food with oxygen inside the body cells.
- Nitrogenous wastes are produced from the breaking down of proteins.
2. The blood carries the excretory wastes from the cells to special organs to get rid of them.
  3. - Drink suitable amounts of clean water daily.
  - Eat balanced healthy food that is low in salts.
  - Don't keep urine in the urinary bladder for long periods.
  - Keeping away from the irrigation canals and avoid urination in it.
11. 1. urinary system.
2. ③ - filtration of the blood from urea, uric acid, excess salts and other waste materials.
  3. ⑤
  4. ④ - urinary bladder ⑤.
  5. ① - ②
  6. urethra - urine

### Timss Questions

1. a. ①      b. ④      c. ②      d. ③
2. 1. ⑥      2. ⑤      3. ④
4. ⑧      5. ⑦      6. ⑥
3. ① Carbon dioxide and water vapour
- ② Skin and urinary system.
- ③ Urinary system.

**Project** On UNIT TWO Answer by Yourself

## Unit Three

### Lesson 1

1. 1. a. soil.      2. d. milk.
  3. d. (a), (b) and (c).
  4. d. all the previous answers.
  5. d. (a) and (b).      6. c. gravel
  7. b. Humus      8. d. Humus.
  9. b. humus.
  10. a. it provides them with nutrients and minerals.
  11. d. all the previous answers
  12. d. all the previous answers.
  13. d. all the previous answers.
  14. d. (a) and (c).      15. b. digging tunnels.
  16. a. Roots of plants
  17. c. Ants and other insects
  18. c. fixing the plant in the soil.
  19. c. their tunnels allow air, water and nutrients to pass easily through soil, then to plant roots.
2. 1. (x) .... non-compacted superficial ....
2. (✓)
  3. (x) .... are sand, clay and humus.
  4. (✓)      5. (✓)      6. (✓)
  7. (x) .... is the decayed remains of animals and plants mixed with the soil components.
  8. (✓)
  9. (x) Running water, change of temperature and wind are factors to ....
  10. (x) .... of three layers.
  11. (x) .... contain pieces of rocks.
  12. (x) ...., humus, earthworms, ants, spiders, small pieces of rocks and leaves of plants.
  13. (x) The roots of plants ....
  14. (x) ...., humus is formed.      15. (✓)
  16. (x) .... the importance of roots of plants for the soil.      17. (✓)
3. 1. Soil.      2. Soil.
3. Humus.      4. Humus.
  5. Humus.      6. Humus.
  7. Top soil layers.      8. Humus.
  9. Lower soil layers.
  10. Rocky layers.      11. Roots of plants.
4. 1. Soil - the Earth's crust.
2. rocks.      3. sand - humus - clay.

4. rocks - minerals.      5. soil.
  6. Humus      7. Humus
  8. Humus      9. Soil
  10. earthworms - some spiders.
  11. winds
  12. top soil layers - lower soil layers - rocky layers.
  13. Top      14. Lower soil layers
  15. Roots of plants
  16. nutrients - the soil erosion
  17. humus.      18. Roots of plants
  19. nests - eggs.
  20. air - water - nutrients
5. 1. Due to the variation in types of rocks and minerals that form soil.
2. Because it is necessary for :
    - Plant growth.
    - Animals and human that eat these plants.
    - Animals that make their homes in soil.
  3. Due to the colour of humus which is dark brown or black.
  4. As it provides soil with nutrients.
  5. Because plants take minerals and other nutrients from the soil to live and grow.
  6. • Soil is necessary for animals, because :
    - They eat plants that previously depend on soil.
    - Some animals depend on soil as a shelter.
    - Soil is necessary for humans, as they eat plants and animals that previously depend on soil.
  7. Because soil represents the shelter for them, as they make their homes underground by digging tunnels.
  8. Because running water and winds break down rocks into small pieces causing soil erosion.
  9. Because :
    - They help the soil to be cohesive.
    - They add nutrients to soil as they convert into humus after death.
    - They prevent the soil erosion from happening quickly.
  10. Because :
    - They help in the growth of plant roots, as the tunnels that are formed by them allow air, water and nutrients to pass through soil, then to the plant roots.



– When these organisms die, their bodies decay forming humus.

11. They are important for soil as they form humus when their bodies decay after death.
12. Because these tunnels allow air, water and nutrients to pass easily through soil, then to plant roots causing their growth.
13. Because :

– Their tunnels allow air, water and nutrients to pass easily through soil, then to plant roots causing their growth.

– When they die, their bodies decay forming humus that add nutrients to soil and plants.

6. 1. Plants can't grow and there is no food for animals and humans and there is no shelter for some animals.
2. Humus can be formed.
3. Rocks are broken into small pieces with different sizes and shapes causing soil erosion.
4. – The soil erosion occurs quickly.  
– Soil is poor in nutrients as humus isn't formed.  
– Soil isn't cohesive.  
– Plants cannot be fixed in the soil.
5. Humus can't be formed and plants will die.

7. 1. It is a thin non-compacted upper layer which covers the Earth's crust.
2. It is the decayed remains of animals and plants mixed with the soil components and its colour is dark brown or black.

8. Soil is made of many components as :  
– Pieces of rocks ( that composed of sand, clay, minerals and gravel).  
– Water. – Air. – Silt. – Humus.

9. Because when they die, their bodies decay forming humus that is a main component of soil.

10. It is necessary for all living organisms, where:  
– Plants take minerals and other nutrients from soil to live and grow.  
– Animals eat plants that previously depend on soil and some animals make their homes in soil.  
– Human eat plants and animals that previously depend on soil.

11. ① Humus.  
② Particles of mud (clay). ③ Silt.  
④ Particles of sand. ⑤ Gravel.

12. 1. Running water where water breaks down rocks into small pieces causing soil erosion.
2. Winds that breaks down rocks causing soil erosion.
3. Temperature change that breaks down rocks by time causing soil erosion.

### Timss Questions

1. 1. Top soil layer.
2. a. – They help the soil to be cohesive.  
– They add nutrients to soil as they are converted into humus after death.  
– They prevent the soil erosion from happening quickly.
- b. It considered the shelter for them, as they make their homes underground by digging tunnels.
3. They form humus after death.

2. ① Change of temperature. ② Winds.

3. 1. Earthworm in the top soil layers.
2. It is useful for soil.
3. – They help in the growth of plant roots, where they dig tunnels that allow air, water and nutrients to pass easily through soil, then to plant roots.  
– When they die, their bodies decay forming humus.

### Lesson (2)

1. 1. b. Silt  
3. a. yellow colour.  
5. b. small.  
7. b. medium  
9. d. (b) and (c) are correct.  
10. a. good.  
12. a. is very compacted.  
13. d. (b) and (c).  
15. b. sand  
17. a. drains  
19. b. silt soil.  
20. a. very fertile soil.  
21. a. a great ability to drain water.
2. d. (a) and (b).  
4. b. black  
6. c. silt soil.  
8. c. medium.  
11. b. sand soil  
14. d. Clay  
16. c. (a) and (b)  
18. b. silt soil.

22. c. less fertile.
24. d. rice.
26. b. silt soil.
28. c. Peanut
23. a. peanut plant
25. a. Cotton.
27. d. (a) and (b)
29. a. clay

2. (a) 1. c  
(b) 1. b
2. d  
2. c
3. b  
3. a

3. 1. (x) The clay soil ....
2. (x) Silt soil ....
3. (x) .... is yellow, while that of the clay soil is black.
4. (✓)
5. (x) .... are very small.
6. (✓)
7. (x) Clay soil is ....
8. (x) .... of sand soil ....
9. (✓)
10. (x) .... is poorly aerated, while .... is well aerated.
11. (✓)
12. (x) Clay soil has low drainage of water ....
13. (✓)
14. (✓)
15. (✓)
16. (✓)
17. (x) .... sand soil.
18. (✓)
19. (✓)
20. (x) Sweet potatoes, potatoes ....
21. (✓)
22. (✓)
23. (x) .... in clay soil.

4. 1. Sand soil.  
3. Clay soil.  
5. Clay soil.  
7. Sand soil.  
9. Silt soil.  
11. Clay soil.  
13. Clay soil.  
15. Clay soil.  
17. Silt soil.  
19. Silt soil.  
21. Sand soil.  
23. Potatoes and sweet potatoes.  
24. Clay soil.  
26. Silt soil.
2. Silt soil.  
4. Silt soil.  
6. Sand soil.  
8. Clay soil.  
10. Silt soil.  
12. Sand soil.  
14. Sand soil.  
16. Silt soil.  
18. Sand soil.  
20. Clay soil.  
22. Peanut plant.  
25. Silt soil.

5. 1. sand – silt – clay soils.
2. Silt – sand
4. clay – silt – sand
6. Silt
8. Clay
10. sand – clay
12. Sand – moderately
3. Silt
5. clay – sand
7. Silt – sand
9. sand – silt
11. sand – clay
13. highly

14. Clay – sand
16. Silt – humus.
18. Sand – humus.
20. high – high – high.
21. Clay – sand
23. sand
25. Silt
27. Sand – silt
29. clay
15. Sand – clay
17. humus.
19. more – sand
22. Sand – potatoes.
24. sand – clay
26. Silt – sand
28. silt – wheat
30. lemon – silt – cotton

6. 1. Because it is composed mainly of sand particles.
2. Because the particles of sand soil are weakly compacted, the particles of silt soil are moderately compacted and the particles of clay soil are highly compacted.
3. Because the compactness between the particles of clay soil are larger than the compactness in both sand and silt soils, so the rising of water is higher in clay soil than in silt and sand soils.
4. Because it has weakly compacted particles.
5. Because it has the slowest drainage of water.
6. Because it has moderately compacted particles.
7. Because it has highly compacted particles.
8. Because its particles are highly compacted.
9. Because its particles are weakly compacted (loose).
10. Because its particles are moderately compacted.
11. Because its particles are weakly compacted (loose).
12. Because it is rich in humus.
13. Because it is rich in humus.
14. Because it contains medium amount of humus.
15. Because it rarely contains humus.
16. Because sand soil is suitable for cultivation of plants that produce tubers as potatoes and sweet potatoes.
17. Because sand soil is suitable for cultivation of plants which give fruits beneath soil surface.

7. 1. The odd statement : Poorly aerated.
2. The odd statement : Poor in humus.



3. The odd statement : Dark in colour.
4. The odd statement : Sand soil.
5. The odd statement : Silt soil.
6. The odd word : Rice.
7. The odd word : Lemon.
8. The odd word : Potatoes.
9. The odd word : Wheat.
10. The odd word : Pomegranates.

8. - Clay soil : Cotton - rice - wheat.  
- Silt soil : Lemon - strawberry - pomegranates.  
- Sand soil : Potatoes - sweet potatoes - cactus.

9. Look at the main book on page (112).

10. 1. ① Humus.                      ② Sand  
            ③ Silt                      ④ Clay
2. Figure (b).
3. - The silt soil is highly fertile as it is rich in humus.  
- The clay soil is fertile as it has a medium amount of humus.  
- The sand soil is less in fertility as it is poor in humus.

11. 1. It is the soil that composed mainly of sand particles, a small amount of clay and silt, and rarely contains humus.
2. It is the soil that composed of a mixture of equal amounts of gravel, sand, clay and silt, but it contains more humus.
3. It is the soil that composed mainly of clay and silt particles, and a small amount of sand and humus.
4. It is the percentage of humus in soil.

12. 1. Clay soil - Silt soil - Sand soil.  
2. Sand soil - Silt soil - Clay soil.  
3. Clay soil - Silt soil - Sand soil.  
4. Sand soil - Silt soil - Clay soil.  
5. Clay soil - Silt soil - Sand soil.  
6. Silt soil - Clay soil - Sand soil.

13. - Clay soil : Cotton and Sugar cane.  
- Sand Soil : Potatoes and cactus.  
- Silt Soil : Orange and lemon.

14. 1. Fig. (a) represents sand soil, fig. (b) represents silt soil and fig. (c) represents clay soil.

2. Silt soil in fig. (b).
3. Clay soil in fig. (c).
4. Silt soil in fig. (b).

**Timss Questions**

1. 3. Soil (a) is sand soil, soil (b) is clay soil and soil (c) is silt soil.
2. 4. Sample (A) is sand soil, sample (B) is clay soil and sample (C) is silt soil.
3. 1. Tube (c).  
2. Tube (a).  
3. Tube (b).  
4. The sand soil is well aerated and has low water absorption, the clay soil is poorly aerated and has high water absorption and the silt soil is moderately aerated and has medium water absorption.
4. 1. - Fig.(a) contains sand soil.  
- Fig.(b) contains silt soil.  
- Fig.(c) contains clay soil.  
2. Clay soil in fig.(c).  
3. - The sand soil has the greatest drainage of water and the lowest retaining of water.  
- The clay soil has the slowest drainage of water and the highest retaining of water.  
- The silt soil has the medium drainage of water and the medium retaining of water.

**Project** On UNIT THREE Answer by Yourself

# Guide Answers of Worksheets









- (B) 1. They are the paths of blood throughout the body.  
2. It is a muscular hollow organ equals about the size of your fist.

3. (A) 1. Atria. 2. Aorta. 3. Valve.  
(B) 1. blood vessels. 2. ventricles

4. (A) 1. The blood will be mixed in both sides of the heart.  
2. The blood can't deliver digested food and oxygen to the cells and can't carry carbon dioxide and wastes away from the cells.  
3. The blood will return back from the ventricles to the atria during the contraction of the heart (ventricles).

(B)

P.O.C	Arteries	Veins
Function :	They carry blood from the heart to all the body parts.	They carry blood from all the body parts to the heart.
Thickness :	They are thick blood vessels.	They are thin blood vessels.

5. (A) ① Left atrium. ② Valve.  
③ Left ventricle. ④ Right ventricle.  
⑤ Right atrium. ⑥ Aorta.  
⑦ Pulmonary

- (B) – It pumps the blood continuously throughout the body.  
– Its size is about your fist.  
– It locates inside the chest cavity between the two lungs.

### Worksheet 5

1. (A) 1. 70 beats  
2. Right – the pulmonary artery.  
3. Red blood cells – white blood cells  
(B) 1. The white blood cells will attack these microbes.  
2. When the body is wounded, bleeding can not stop.
2. (A) 1. a. keep exercising  
2. d. (a), (b) and (c).  
3. d. blood capillaries.

- (B) 1. Because they carry oxygen from the lungs to all the body cells and carry carbon dioxide from the cells to the lungs.  
2. Because it harms the heart and weakens the blood circulation.

3. 1. Plasma. 2. Red blood cells.  
3. Blood platelets. 4. Valve.  
5. Left atrium.

4. (A) 1. left ventricle 2. red blood cells.

Point of comparison	Red blood cells	White blood cells
Function :	- They carry oxygen gas from lungs to all the body cells. - They carry carbon dioxide gas from all the body cells to the lungs.	They defend the body against microbes by attacking them.

5. (A) 1. b 2. d 3. c 4. e 5. a

- (B) 1. Keep exercising to strengthen the heart muscle and to activate the blood circulation.  
2. Eat healthy and balanced food that is low in fats and salts.  
3. Avoid smoking and smokers.  
4. Avoid exposure to infections and accidents.

### Worksheet 6

1. 1. excretory materials – solid wastes  
2. abdominal  
3. skin – urinary system.  
4. bean  
5. excess salts – excess water – sweat.  
6. urine
2. (A) 1. Because the excretory materials contain poisonous materials that the body must get rid of them and other harmless materials that the body can't use them.  
2. Because it stores the urine temporarily until it is released outside the body.  
3. Because the secreting of sweat increases in summer due to the high temperature, so the amount of urine decreases.

- (B) 1. the urinary system. 2. kidney.  
3. Urethra 4. urine

3. 1. Sweat. 2. Urinary system.  
3. Ureter. 4. Urinary bladder.  
5. Sweat glands.

4. (A) 1. The body will be poisoned by the poisonous excretory materials.  
2. The urine can't be stored until it is released outside the body.

- (B) 1. b 2. c 3. a 4. d

5. (A) 1. Ureter 2. Urinary bladder  
3. kidney 4. Urethra

- (B) 1. They are the excretory materials that produced from breaking down of proteins that produces urea and uric acid.  
2. It is the system that clarifies blood from (gets rid of) the nitrogenous wastes (urea and uric acid), excess salts and excess water from the body.

### General Exercise of the School Book on Unit 2

1. 1. veins. 2. valve  
3. urethra.  
4. plasma – blood platelets.  
5. urea – uric acid. 6. clot
2. 1. (✓)  
2. (✗) The pulmonary artery delivers .....  
3. (✓)  
4. (✗) ... harms the circulatory system.  
5. (✗) ... harms urinary bladder.  
6. (✗) ... human's blood.  
7. (✗) Urethra is a tube ...

3. 1. c. fist. 2. a. arteries.  
3. b. white blood cells. 4. b. lungs.  
5. b. kidneys.

4. 1. ① Red blood cells. ② White blood cells.  
③ Blood platelets. ④ Plasma.  
2. Component number ① :  
– They carry oxygen gas from the lungs to all the body cells.  
– They carry carbon dioxide gas from all the body cells to the lungs.

Component number ② :

- They defend the body against microbes.  
3. Plasma.

### Model Exam 1 on Unit 2

1. (A) 1. atria – ventricles. 2. fats – salts.  
3. Ureter – urine 4. plasma.  
(B) It is the system that transports the digested food, oxygen gas and water to all the body cells and carries the wastes to special organs in your body to get rid of them.
2. (A) 1. pulmonary artery 2. urine  
3. Skin  
(B) 1. a. bean  
2. a. Poisonous excretory materials.  
3. b. away from the heart.
3. (A) 1. It filters the blood from urea, uric acid, some excess salts and other waste materials.  
2. It allows the blood flow from the atrium to the ventricle and not in the opposite direction.  
(B) 1. – The odd word : Right atrium.  
– The scientific term : The urinary system.  
2. – The odd word : Urinary bladder.  
– The scientific term : The blood components.

4. (A) 1. To keep the circulatory system healthy.  
2. Because they are necessary in clotting blood to heal wounds.  
3. Because the sweat consists of some excess salts and excess water.  
(B) 1. Eat healthy and balanced food (law in fats and salt).  
2. Drink a suitable amount of clean water every day especially in summer.

### Model Exam 2 on Unit 2

1. (A) 1. Urinary bladder. 2. Blood capillaries.  
3. Aorta.  
(B) 1. The blood cannot carry digested food to all parts of the body.



2. The body cannot get rid of the poisonous excretory materials, so the person will die.

2. (A) 1. a. right atrium. 2. a. oxygen.  
3. b. blood

(B) 1. To keep the kidneys and the urinary system healthy.  
2. Because they defend the body against microbes.

3. (A) 1. heart 2. White blood cells  
3. ventricle – valve.

(B) 1. They transport the blood from the heart to all the body parts.  
2. They transfer the urine from the two kidneys to the urinary bladder.  
3. They help in the formation of blood clot and healing wounds.

4. (A) 1. abdominal cavity. 2. urinary bladder  
3. thin. 4. a vein.

5. chest

- (B) 1. (x) 2. (✓)

### Worksheet 7

1. 1. Soil 2. sand – humus – clay.  
3. sand – clay – minerals.  
4. Humus 5. Soil 6. humus.

2. (A) 1. Humus. 2. Soil.

(B) 1. Due to the colour of humus which is dark brown or black.

2. Because it is necessary for :

- plants growth.
- Animals and humus that eat these plants.
- Some animals as they make their homes in soil.

3. Because plants take minerals and other nutrients from the soil to live and grow.

3. 1. d. all the previous answers.

2. d. Humus. 3. d. (b) and (c).  
4. b. humus. 5. d. potatoes.

4. (A) 1. Humus can be formed.

2. Plants couldn't grow and there is no food for humans and some animals and there is no shelter for some animals.

(B) 1. Running water where water breaks down rocks into small pieces forming soil.

2. Winds that breaks down rocks forming soil.

3. Temperature change.

5. 1. (x) The colour ... 2. (✓)

3. (x) ... is dark brown or black.

4. (x) ... sand, humus, silt, water, gravel and clay.

5. (x) ... the first layer is humus ...

### Worksheet 8

1. 1. d. All the previous answers.

2. b. humus. 3. d. (a), (b) and (c).

4. a. they form tunnels that allow air, water and nutrients to pass easily through soil.

5. a. it provides them with nutrients and minerals.

2. 1. Because :

- They help the soil to be cohesive.
- They add nutrients to soil as they are converted into humus after death.
- They prevent the soil erosion from happening quickly.

2. Because :

- They dig tunnels in the soil that allow air, water and nutrients to pass to plant roots causing their growth.
- When they die, their bodies decay forming humus that adds nutrients to soil and plants.

3. Because running water breaks down rocks into small pieces causing soil erosion.

3. 1. Lower soil layer

2. Winds - running water.

3. Roots of plants 4. Earthworms

4. (A) 1. It is the decayed remains of animals and plants mixed with the soil components and its colour is dark brown or black.

2. It is a thin non-compacted (loose) superficial (upper) layer which covers the Earth's crust.

(B) 1. Rocks are broken into small pieces causing soil erosion.

2. The soil will not be cohesive, soil erosion will happen quickly, the soil will be poor in humus and plants cannot be fixed in the soil.

5. ① Humus.

② Particles of clay (mud). ③ Silt.

④ Particles of sand. ⑤ Gravel.

### Worksheet 9

1. 1. Sand soil. 2. Silt soil. 3. Sand soil.  
4. Clay soil. 5. Silt soil.

2. (A) 1. Silt - sand 2. Sand - clay  
3. lemon - silt

(B) 1. Pomegranates. 2. Potatoes.

3. 1. e 2. d 3. a 4. b 5. c

4. (A) 1. Because it is composed mainly of sand particles.  
2. Because it has highly compacted particles.  
3. Because it is rich in humus.

(B) -- Funnel in fig. (1) contains sand soil, because it has the fastest and greatest drainage of water and the lowest retention of water.

-- Funnel in fig. (2) contains silt soil, because it has the medium drainage of water and the medium retention of water.

-- Funnel in fig. (3) contains clay soil, because it has the slowest drainage of water and the highest retention of water.

5. 1. (x) ... in sand soil.

2. (x) The types of soil are three which are silt soil, sand soil and clay soil.

3. (✓) 4. (x) Silt soil is ... 5. (✓)

### Worksheet 10

1. 1. sand - clay 2. fast - slow.  
3. silt - clay 4. silt  
5. sand - clay

2. (A) 1. Cotton. 2. Peanut. 3. Potatoes.

(B) 1. silt 2. gray

3. 1. Sand soil is weakly compacted, silt soil is moderately compacted and clay soil is highly compacted.

2. Sand soil is good aerated, silt soil is medium aerated and clay soil is poor aerated.

3. Sand soil has low water absorption, silt soil has medium water absorption and clay soil has high water absorption.

4. 1. a. Lemon. 2. c. Sand 3. b. silt  
4. c. Sand 5. d. Silt soil

5. (A) 1. Because it is composed mainly of sand particles.  
2. Because sand soil is suitable for cultivation of plants that produce tubers.

(B) 1. (x) ... in clay soil.

2. (x) ... are small. 3. (✓)

### General Exercise of the School Book on Unit 3

1. 1. sand soil – silt soil – clay soil.  
2. good – high – high.

2. 1. (x) The clay soil is ....

2. (✓)

3. (x) ... decayed remains of animals and plants mixed with the soil components.

4. (x) ... sand soil.

3. 1. c. medium. 2. a. tiny.  
3. b. sand 4. a. clay

4. 1. Soil. 2. Humus. 3. Silt soil.  
4. Clay soil. 5. Sand soil.

5. 1. Because it has weakly compacted particles.

2. Because the compactness between the particles of clay soil are larger than the compactness in both sand and silt soils, so the rising of water is higher in clay soil than in silt and sand soils.

3. Because it is rich in humus.

4. Because it has highly compacted particles.

5. Because the particles of sand soil are weakly compacted, the particles of silt soil are moderately compacted and the particles of clay soil are highly compacted.

6. Because they increase the soil fertility when these micro-organisms die and their bodies decay and change into humus.



6. – Sand soil : Potatoes, sweet potatoes and cactus.  
 – Silt soil : Lemon, oranges and strawberry  
 – Clay soil : Cotton, wheat and sugar cane.

### Model Exam 1 on Unit 3

1. (A) 1. d. has moderate percentage of humus.  
 2. a. Humus 3. c. Soil 4. a. clay  
 (B) 1. Top soil layer.  
 2. Silt soil.

2. (A)

Points of comparison	Clay soil	Silt soil	Sand soil
Colour :	Black.	Grey.	Yellow.
Size of Particles :	Small.	Medium.	Large.
Compactness :	Very compacted.	Medium in compacted.	Weakly compacted.
Drainage of water :	Low.	Medium.	High.
Fertility :	Fertile.	More fertile.	Low in fertility.

(B) 1. clay 2. sand 3. humus

3. (A) 1. Because it has moderately compacted particles.  
 2. Because they break down rocks into small pieces causing soil erosion.  
 3. Because :  
 – They help the soil to be cohesive.  
 – They add nutrients to soil as they convert into humus after death.  
 – They prevent the soil erosion from happening quickly.  
 (B) 1. clay soil 2. silt

4. (A) 1. (✓) 2. (x) 3. (✓)  
 (B) 1. The soil is not suitable for cultivation.  
 2. Humus can't be formed and plants will die.

### Model Exam 2 on Unit 3

1. (A) 1. Soil. 2. Clay soil.  
 3. Roots of plants.  
 (B) 1. Plants can't grow and there is no food for animals and human and there is no shelter for some animals.  
 2. It will be low fertile.

2. (A) 1. a 2. d. (b) and (c)



3. a. Cotton.

(B) 1. sand soil 2. Clay

3. (A) 1. Because it is composed mainly of sand particles.  
 2. Because it contains medium amount of humus.  
 3. They are important for soil as they form humus when their bodies decay after death.  
 (B) It is a thin non-compacted upper layer which covers the Earth's crust.

4. (A) 1. Roots of plants 2. Silt  
 3. sand 4. Top

Sand soil	Silt soil	Clay soil
– Sweet potatoes	– Pomegranates	– Wheat
– Peanut	– Lemon	– Rice

## Guide Answers of Final Examinations





1. (A) 1. ventricle – valve.  
2. two ureters – urinary bladder.  
3. type of the surface material – speed of the body.
- (B) – Drink suitable amount of clean water.  
– Eat healthy food low in salts.  
– Don't keep urine in the urinary bladder for long periods.

2. (A) 1. Blood platelets 2. Blood  
3. urethra.
- (B) 1. Water resistance. 2. Red blood cells.  
3. Ventricles.

3. (A) 1. Because it harms the heart and weakens the blood circulation.  
2. To decrease the surface area, so the air resistance decreases and the speed increases.  
3. Because the skin gets rid of some excess salts and excess water in the form of sweat.

- (B) 1. c. fist. 2. c. friction.  
3. a. opposite 4. c. white blood cells.  
5. a. arteries. 6. a. lungs.

4. (A) 1. (x) .... low in fats ....  
2. (x) ..... increase air .....  
3. (✓)  
4. (✓)  
5. (x) ..... hard.
- (B) 1. The rate of your heartbeats will increase.  
2. The blood in the two sides of the heart will be mixed.

1. (A) 1. ureter – urinary bladder  
2. the movement force.  
3. veins – blood capillaries.

- (B) 1. Because they carry oxygen from the lungs to all the body cells and carry carbon dioxide from the cells to the lungs.  
2. To increase the air resistance by increasing its surface area, so landing speed decreases.  
3. Because it will harm the circulatory system.

2. (A) 1. Water resistance. 2. Ventricles.  
3. The soil. 4. The Kidney.  
5. Humus. 6. Plasma.

- (B) 1. They defend the body against microbes by attacking them.  
2. – It helps us to control the car speed and to change the car direction.  
– It helps in lighting of a match.  
3. They produce sweat through the skin.

3. (A) 1. a. arteries. 2. b. lungs.  
3. a. decrease 4. c. Platelets  
5. a. plasma. 6. c. fist.

- (B) 1. To allow the blood to flow from the atrium to the ventricle and prevents it from returning back.  
2. – They help the soil to be cohesive.  
– They prevent the soil erosion from happening quickly.  
– They add nutrients to soil as they convert into humus after death.  
3. To keep the kidneys or the urinary system healthy.

4. (A) 1. (x) .... two sides.  
2. (x) ... has salty ...  
3. (x) .... sand, gravel, humus and silt.  
4. (✓)  
5. (x) The clay soil ....  
6. (x) .... yellow .... black.

- (B) 1. Smoking will harm the heart and weakens the blood circulation.  
2. It rises the temperature of the internal moving parts of machines to more than a certain limit, so machines are damaged and a lot of money is wasted.

1. 1. opposite 2. four – two  
3. Kidneys 4. increases  
5. blood platelets – plasma.  
6. The urinary bladder  
7. non-compacted – the Earth's crust.  
8. rough – smooth  
9. Clay  
10. sand soil – silt soil – clay soil.

2. 1. Air resistance. 2. Red blood cells.  
3. Ureter. 4. Pulmonary veins.  
5. Humus. 6. Friction force.

3. 1. decreases 2. kidneys.  
3. friction 4. Arteries  
5. Humus 6. fist

4. (A) 1. (✓) 2. (x) 3. (✓) 4. (x)

- (B) 1. To decrease the surface area, so the water resistance decreases and the speed increases.  
2. To allow the blood to pass from the atrium to the ventricle and not in the opposite direction.

1. (A) 1. b. ceramic 2. c. Blood capillaries  
3. c. Lungs 4. c. light.
- (B) 1. Heart – the size of your fist.  
2. It pumps the blood continuously throughout the body.

- (C) 1. The blood platelets will form blood clot to prevent bleeding.  
2. Plants can't grow and there is no food for animals and humans and there is no shelter for some animals.

2. (A) 1. Humus. 2. Water resistance.  
3. Aorta. 4. Sweat gland.

- (B) 1. They prevent the soil erosion from happening quickly.  
2. It filters the blood from some wastes such as urea, uric acid, excess salts and other waste materials.

- (C) 1. Earthworm.  
2. It is useful to the soil because it digs tunnels in the soil that allow air, water and nutrients to pass easily through the soil.

3. (A) 1. False. 2. False.  
3. False. 4. True.  
5. False.

- (B) 1. To allow the blood to flow from the atrium to the ventricle and prevents its returning back.  
2. To increase the air resistance by increasing its surface area, so landing speed decreases.  
3. Because its particles are moderately compacted.

(C) streamline – air resistance

4. (A) 1. Number ⑤. 2. Number ①.  
3. Number ④. 4. Urinary system.

(B) 1.

Blood	Urine
Red blood cells – white blood cells – blood platelets and plasma.	Containing some excess water, excess salts, urea and uric acid.

2.

Atria	Ventricles
They are connected to veins.	They are connected to arteries.

1. (A) 1. urea – uric acid. 2. atrium – ventricle.  
3. opposite 4. humus  
5. effect of friction force.  
6. backbone.

- (B) 1. To prevent the mixing of blood in the two sides of the heart.  
2. – They carry oxygen gas from the lungs to all the body cell.  
– They carry carbon dioxide gas from all the body cells to the lungs.



2. (A) 1. a. sweat. 2. b. humus.  
3. b. sugar. 4. a. increases.  
5. b. water resistance. 6. c. fist.

- (B) 1. To allow the blood to deliver digested food and oxygen to the cells, then carry carbon dioxide and wastes out of the body cells.  
2. To allow the blood to pass from the atrium to the ventricle and not in the opposite direction.  
3. To decrease the surface area, so the air resistance decreases and the speed increases.  
4. Because it has highly compacted particles.

3. (A) 1. Ventricles. 2. Soil.  
3. Air resistance. 4. Plasma.  
5. Humus.  
6. Blood capillaries.

- (B) 1. (✓) 2. (✓)  
3. (x) .... low in fats .... 4. (✓)

4. (A) 1. The machines are damaged.  
2. The friction force increases.  
3. The urinary system will be harmed.

- (B) 1. It is the force between two surfaces in contact that acts in a direction opposite to the direction of motion and causes the object to slow down and stop.  
2. It is a thin non-compacted superficial layer which covers the Earth's crust.  
3. It is the system that transports the digested food, oxygen gas and water to all the body cells and carries the wastes to special organs in your body to get rid of them.

6 Manar House International Schools

1. 1. digested food – oxygen  
2. Soil – Earth's crust.  
3. streamline – decrease  
4. sand soil – silt soil – clay soil.

2. 1. Two kidneys. 2. Red blood cells.  
3. Soil. 4. Friction force.  
5. Humus. 6. Two lungs.

3. (A) 1. a. proteins. 2. a. increase.  
3. b. Veins 4. a. Roots of plants  
5. b. between smooth surfaces.

- (B) 1. It gets ride of excess salts and some excess water in the form of sweat.  
2. It allows the blood to flow from the atrium to the ventricle and prevents it from returning back.

4. (A)

P.O.C.	Arteries	Veins
1. Thickness :	They are thick blood vessels.	They are thin blood vessels.
2. Function :	They carry the blood from the heart to all the body parts.	They carry the blood from all the body parts to the heart.
3. Examples :	– Aorta. – Pulmonary artery.	– Superior vena cava and inferior vena cava. – Pulmonary veins.

- (B) 1. Because secreting sweat increases in summer due to the high temperature, so the amount of urine decreases.  
2. Due to the increase in the friction force.  
3. Because it has weakly compacted particles.

Giza Governorate

7 Beverly Hills Language School

1. (A) 1. Left 2. friction force.  
3. winds  
4. oxygen – carbon dioxide.

- (B) – They help the soil to be cohesive.  
– They prevent the soil erosion from happening quickly.

2. (A) 1. Plasma. 2. White blood cells.  
3. The urinary system.  
4. Top soil layer.

- (B)

Points of comparison	Arteries	Veins
1. Thickness :	They are thick blood vessels.	They are thin blood vessels.
2. Example :	- Aorta.	- Pulmonary veins.
3. Function :	They carry the blood from the heart to all the body parts.	They carry the blood from all the body parts to the heart.

- (C) 1. a. Arteries 2. b. bean  
3. b. humus. 4. a. proteins.

3. (A) 1. (x) .... blood.  
2. (x) ...., there is friction force ....  
3. (x) .... to all the body parts.  
4. (x) .... hard.  
5. (x) Sweet potatoes ....

- (B) 1. The blood in the two sides of the heart will be mixed.  
2. When the body is wounded, bleeding can't stop.

- (C) 1. The human urinary system.  
2. (a) Kidney. (b) Ureter.  
(c) Urinary bladder.

4. (A) 1. Becasue the sweat consists of some excess salts and excess water.  
2. Due to the colour of humus which is dark brown or black.  
3. To allow the blood to pass from the atrium to the ventricle and not in the opposite direction.  
4. To decrease the surface area, so the water resistance decreases and the speed increases.

- (B) It stores the urine temporarily until it is released outside the body through urethra.

- (C) It is a type of friction force resulting from the movement of an object through air.

8 Modern Infinity Language School

1. (A) 1. fist. 2. an object  
3. streamline 4. opposite  
5. a wall 6. salty  
7. Clay

- (B)

Circulatory system	Urinary system
1. Eat healthy and balanced food.	1. Don't keep urine for a long periods in the urinary bladder.
2. Drink a suitable amount of clean water everyday especially in summer.	2. Eat balanced healthy food that is law in salt.
3. Avoid exposure to infections and accidents.	3. Drink suitable amounts of clean water daily especially in summer.

2. 1. c. 4 2. a. Sweat glands  
3. c. carrying oxygen. 4. b. Ureters  
5. b. kidney 6. a. Humus

3. (A) 1. False. 2. False.  
3. False. 4. False.

- (B) 1. – It helps in moving and stopping cars or bicycles.  
– It helps in lighting up a match.  
– It helps us to catch and hold things with our hands.  
2. To allow the blood to deliver digested food and oxygen to the cells, then carry carbon dioxide and wastes away from the cells.  
3. Because it has weakly compacted particles.

4. (A) (1) Kidney. (2) Ureter.  
(3) Urinary bladder.  
(B) 1. Friction force. 2. Urine.  
3. White blood cells.



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## October Educational Directorate

1. (A) 1. opposite  
3. red  
(B) 1. To decrease the surface area, so the air resistance decreases and the speed increases.  
2. Because it is rich in humus.
2. (A) 1. Water resistance.  
3. Soil.  
(B) 1. dark brown or black.  
2. Blood platelets
3. (A) 1. c. sweat glands.  
3. c. fist.  
5. b. Earthworms  
(B) They defend the body against microbes by attacking them.
4. 1. (✓) 2. (x) 3. (✓)  
4. (x) 5. (x) 6. (✓)

10

## Kerdasa Educational Directorate

1. 1. Ureter – urine  
3. blood vessels – blood.  
4. red blood cells – white blood cells.  
5. type of the surface material – speed of the body.
2. (A) 1. Air resistance.  
3. Heart.  
5. Humus.  
(B) 1. – They take water and nutrients from soil.  
– They fix the plant in the soil.  
2. They defend the body against microbes by attacking them.  
3. They allow the blood to flow from the atrium to the ventricle and prevent it from returning back.
3. (A) 1. (x) 2. (✓) 3. (x)  
4. (x) 5. (x) 6. (✓)  
7. (x)

- (B) 1. Because the sweat consists of some excess salts and excess water.  
2. To decrease the surface area, so the water resistance decreases and the speed increases.  
3. Because it has highly compacted particles.

4. (A) 1. c. fist.  
3. d. All the previous answers.  
(B) 1. urinary  
2. ① Kidney. ② Ureter.  
③ Urinary bladder.

## Alexandria Governorate

11

## Brilliance Language School

1. 1. lungs – sweat.  
3. Surface area – speed  
4. atrium – ventricle.  
5. streamline – decrease
2. 1. (x) 2. (x) 3. (x)  
4. (✓) 5. (✓) 6. (✓)  
7. (x) 8. (x)
3. 1. b. veins.  
3. c. all the previous answers  
4. c. water resistance.  
6. b. valve.
4. (A) 1. Soil.  
3. Heart.  
(B) 1. c 2. d 3. b 4. a

## Qalyoubia Governorate

12

## Memphis Language School

1. (A) 1. urea – uric acid.  
3. red blood cells – white blood cells – plasma.  
4. friction force.  
(B) 1. Because the skin gets rid of some excess salts and excess water in the form of sweat.

2. To decrease the surface area, so the air resistance decreases and the speed increases.  
3. Because it is necessary for :  
– plant growth.  
– Animals and humans that eat these plants.
- (C) 1. (x) .... harms the urinary system.  
2. (x) ..... backbone.  
3. (x) .... increases when the car ....  
4. (✓)

2. (A) 1. Pulmonary artery.  
2. Water resistance.  
(B) 1. It filters the blood from some wastes as urea, uric acid, excess salts and other waste materials.  
2. They help the soil to be cohesive.  
3. It transports the digested food, oxygen gas and water to all the body cells.
3. (A) 1. c. Platelets  
3. b. proteins.  
(B) 1. – The soil erosion occurs quickly.  
– Plants cannot be fixed in the soil.  
2. The surface area increases, so the air resistance increases and landing speed decreases.  
(C) Clay soil : Cotton – rice – wheat.  
Silt soil : Lemon – orange – strawberry.  
Sand soil : Cactus – peanut – potatoes.

4. (A) 1. ① Kidney.  
③ Ureter.  
2. It stores the urine temporarily until it is released outside the body through urethra.  
(B) 1. friction  
3. The kidneys  
(C) Air resistance : It is a type of friction force resulting from the movement of an object through air.  
Water resistance : It is a type friction force resulting from the movement of an object through water.

13

## Al Resala Language School

1. (A) 1. friction – water.  
2. urea – uric acid – excess water.  
3. Red – plasma  
5. veins – thin  
6. sand soil – silt soil – clay soil.  
(B) ① Kidney. ② Ureter.  
③ Urinary bladder. ④ Urethra.
2. (A) 1. Blood platelets  
3. two kidneys  
(B) 1. – The odd word is : Atria.  
– The name of the others : Blood vessels.  
2. – The odd word is : Food  
– The name of the others : Urine components.  
(C) 1. To allow the blood to pass from the atrium to the ventricle and not in the opposite direction.  
2. – Because they help the soil to be cohesive.  
– They prevent the soil erosion from happening quickly.  
3. Because the sweat consists of some excess salts and excess water.  
4. To decrease the surface area, so the water resistance decreases and the speed increases.  
5. Because its particles are highly compacted.
3. (A) 1. Heart.  
3. Humus.  
5. Plasma.  
(B) 1. d 2. e 3. a 4. b  
(C) 1. Friction force (water resistance) increases.  
2. This will harm the urinary system and the two kidneys.  
3. The white blood cells will attack these microbes.  
4. The friction force increases.



4. (A) 1. c. slipping down. 2. b. wall  
3. a. two kidneys 4. c. bloody urine  
5. c. Both (a) and (b).

- (B) 1. (x) 2. (x)  
3. (✓) 4. (x)  
5. (x) 6. (x)  
(C) ① Right atrium. ② Valve.  
③ Right ventricle. ④ Left ventricle.

### Menofia Governorate

#### 14 Shebeen El-Koum Educational Directorate

1. (A) 1. urea – uric acid.  
2. the speed of the moving body – the surface area of the moving body.  
3. humus – pieces of rocks.  
(B) 1. It is the main component of the environment as it is necessary for all living organisms.  
2. They help in coagulation of blood, so they help in healing wounds.

2. (A) 1. Water resistance. 2. Humus.  
3. Blood capillaries. 4. soil.

- (B) 1. To decrease the surface area, so the water resistance decreases and the speed increases.

2. Because :  
– They help the soil to be cohesive.  
– They prevent the soil erosion from happening quickly.

3. Because it is composed mainly of sand particles.

3. (A) 1. a. lungs. 2. a. colour  
3. a. Red blood cells 4. b. opposite  
5. c. Clay

- (B) 1. It will push the blood to left ventricle.  
2. We can't walk easily and slipping down will occur.

4. (A) 1. (✓) 2. (x) 3. (✓) 4. (x)  
(B) ① Kidney. ② Ureter.  
③ Urinary bladder. ④ Urethra.

### Gharbeya Governorate

#### 15 Al Gharbeya Educational Directorate

1. (A) 1. control – direction.  
2. chest – two lungs.  
3. atrium – ventricle  
4. piece of rocks – humus.  
(B) 1. Red blood cells :  
– They carry oxygen from the lungs to all body cells.  
– They carry carbon dioxide from all body cells to the lungs.  
White blood cells :  
They defend the body against microbes by attacking them.  
2. – A car moves at higher speeds :  
air resistance increases.  
– A car moves at lower speeds :  
air resistance decreases.

2. (A) 1. a. arteries.  
2. a. pulmonary artery 3. b. lungs.  
4. c. Roots

- (B) 1. Smoking will harm your heart and weakens the blood circulation.  
2. Humus can be formed.

3. (A) 1. Friction force. 2. Ureter.  
3. Ventricles. 4. Plasma.

- (B) 1. To decrease the surface area, so the water resistance decreases and the speed increases.

2. To allow the blood to deliver digested food and oxygen to the cells, then carry carbon dioxide and wastes away from the cells.

4. (A) 1. (x) 2. (x) 3. (x)  
4. (✓) 5. (x)

- (B) 1. The urinary system. 2. kidney.  
3. ureter.  
4. urinary bladder.

- (C) Cotton – rice – wheat.

### Al-Dakahliya Governorate

#### 16 West Mansoura Educational Directorate

1. (A) 1. veins – arteries.  
2. rough – smooth  
3. bean – the backbone.  
4. winds – running water.  
5. sand soil – silt soil – clay soil.  
6. moderately  
(B) 1. Because carbon dioxides and water vapour are exhaled from the two lungs during the exhalation process.  
2. Due to the presence of one way valve between each atrium and ventricle.  
3. Because they defend the body against microbes by attacking them.  
4. Because :  
– They help the soil to be cohesive.  
– They prevent the soil erosion from happening quickly.  
(C) Kidney → Ureter →  
Urinary bladder → Urethra.

2. (A) 1. The soil. 2. Water resistance.  
3. Ventricles. 4. Nitrogenous wastes.  
5. Red blood cells. 6. Humus.

- (B) 1. The urinary system will be harmed and the functions of the kidneys will be affected.  
2. You will slip down.  
3. The rate of your heartbeats will increase.

3. (A) 1. b. friction. 2. b. four  
3. a. increases. 4. c. sweat glands.  
5. a. atria.

- (B) 1. It transfers the excretory materials (urine) from the two kidneys to the urinary bladder.

2. It pumps the blood continuously throughout the body.

- (C) The folded paper reaches the ground first, because the air resistance that opposes it is smaller than that opposes the unfolded paper.

4. (A) 1. (x) 2. (x) 3. (✓)  
4. (✓) 5. (x) 6. (x)  
(B) 1. They are small cell fragments (parts).  
2. It is the force between two surfaces in contact that acts in a direction opposite to the direction of motion and causes the object to slow down and stop.

#### 17 Ismailia Governorate

1. (A) 1. opposite 2. wall  
3. winds 4. large intestine.  
(B) a. urinary  
b. ① Kidney. ② Ureter.  
③ Urinary bladder.  
(C) 1. direct 2. black or dark brown  
3. increases.

2. (A) 1. a. larger than 2. b. Blood  
3. b. urinary bladder. 4. b. increases.  
(B) 1. To decrease the surface area, so the water resistance decreases and the speed increases.  
2. Because :  
– They help the soil to be cohesive.  
– They prevent the soil erosion from happening quickly.  
3. Because the sweat consists of some excess salts and excess water.  
4. Because it is composed mainly of sand particles.

- (C) 1. It controls the car speed and changes the car direction.  
2. It enables us to walk as the friction between our shoes and the ground prevents us from slipping down.

3. (A) 1. Water resistance. 2. The soil.  
3. Plasma.  
4. Red blood cells.  
(B) 1. They defend the body against microbes by attacking them.



2. They transfer the excretory materials (urine) from the two kidneys to the urinary bladder.
3. They help in coagulation of blood, so they help in healing wounds.
- (C) 1. Eat healthy and balanced food.
2. Eat more fresh and clean vegetables and fruits.

4. (A) 1. They are thick blood vessels.
2. They carry the blood from the heart to all the body parts.
3. They are thin blood vessels.
4. They carry the blood from all the body parts to the heart.
- (B) 1. The blood will return back from the ventricles to the atria during the contraction of the heart (ventricles).
2. This causes a rise in their temperature to more than a certain limit that causes damage of machines and a lot of money is wasted.

- (C) 1. (x) Roots of plants ....
2. (x) Air resistance increases ...
3. (x) .... of three layers.
4. (✓) 5. (x) .... clay soil.

### 18 Port Said Governorate

1. (A) 1. Friction – opposite 2. plasma.
3. water – winds. 4. Ureter – urine
5. cell wastes.
- (B) 1. They form humus when they decayed after death.
2. It allows the blood to flow from the atrium to the ventricle and prevents it from returning back.
2. (A) 1. The soil. 2. Blood capillaries.
3. Water resistance. 4. Artery.
5. Heart. 6. Urinary system.
- (B) 1. The humus are formed.
2. This causes a rise in their temperature to more than a certain limit that causes damage of machines and a lot of money is wasted.

3. (A) 1. a. harms 2. a. decreases.
3. a. top layer 4. c. skin.
- (B) Arteries : They carry the blood from the heart to all the body parts.
- Veins : They carry the blood from all the body parts to the heart.

4. (A) 1. lungs. 2. a direct.
3. ventricles.
- (B) 1. a 2. c 3. d
- (C) 1. Because :
- They help the soil to be cohesive.
  - They prevent the soil erosion from happening quickly.
2. To increase the air resistance by increasing its surface area, so landing speed decreases.
3. Because its particles are moderately compacted.

### 19 Kafr El-Sheikh Governorate

1. (A) 1. c. Ureters 2. a. Red
3. b. Earthworms
- (B) 1. Pulmonary artery 2. Air resistance
3. Urinary bladder
2. (A) 1. c 2. d 3. b 4. a
- (B) 1. To keep the urinary system and circulatory system healthy.
2. To decrease the surface area, so the water resistance decreases and the speed increase.
3. (A) 1. Humus. 2. Sweat glands.
3. Heart. 4. Friction force.
- (B) living organisms – water
4. (A) 1. (x) 2. (x) 3. (✓)
4. (x) 5. (x)
- (B) 1. I will slip down.
2. Keep exercising strengthen the heart muscle and activates the blood circulation.

### 20 Fayoum Governorate

1. 1. water resistance. 2. White
3. valve 4. urine.
5. sand – gravel.
2. (A) 1. Humus
2. Pulmonary artery
3. opposite 4. Urethra
- (B) 1. They help in coagulation of blood, so they help in healing wounds.
2. It stores the urine temporarily until it is released outside the body through urethra.
3. (A) 1. Ventricles. 2. The soil.
3. Friction force.
- (B) ① Kidney. ② Ureter.
- ③ Urinary bladder.

4. (A) 1. To allow the blood to deliver digested food and oxygen to the cells then carry carbon dioxide and wastes away from cells.
2. Because the sweat consists of some excess salts and excess water.
- (B) 1. c. fat. 2. b. lungs.
3. a. increases. 4. b. Roots of plants
5. a. sand soil. 6. c. Clay

### 21 El-Menia Governorate

1. 1. b. Blood platelets
2. a. water resistance.
3. c. Lighting up a match
4. b. arteries. 5. a. two kidneys
6. b. rocks.
2. 1. (✓) 2. (✓) 3. (✓)
4. (✓) 5. (✓) 6. (x)
7. (x)
3. (A) 1. type 2. ventricles.
3. Humus 4. friction

- (B) 1. To prevent the mixing of blood in the two sides of the heart.
2. Because :
- They help the soil to be cohesive.
  - They prevent the soil erosion from happening quickly.
3. Because it is rich in humus.

4. (A) 1. the urinary system.
2. ① Kidney. ② Ureter.
- ③ Urinary bladder.
- (B) 1. The blood will return back from ventricles to the atria during the contraction of the heart (ventricles).
2. The air resistance increases by increasing the surface area, so landing speed decreases.

### 22 Assiut Governorate

1. 1. White 2. friction
3. urethra. 4. rocks.
5. the urinary system – two lungs.
6. Clay.
2. (A) 1. (✓)
2. (x) .... low in ....
3. (x) .... the human's blood.
4. (x) .... increases. 5. (✓)
- (B) 1. It transfers the excretory materials (urine) from the kidney to the urinary bladder.
2. It prevents the mixing of blood in the two sides of the heart.
3. (A) 1. Water resistance. 2. Humus.
3. Urine.
- (B) 1. Because the skin gets rid of some excess salts and excess water in the form of sweat.
2. Because :
- They help the soil to be cohesive.
  - They prevent the soil erosion from happening quickly.
3. Because it has weakly compacted particles (loose).



4. (A) urinary system.

(B) ① Kidney.

③ Urinary bladder.

⑤ Artery.

② Ureter.

④ Urethra.

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## Qena Governorate

1. (A) 1. type of surface material – speed of the body.

2. heart – blood

3. lungs – kidneys.

4. Water – winds

(B) 1. Friction

2. veins

2. (A) 1. Air resistance.

2. The urinary system.

3. The soil.

4. Humus.

(B) – It enables us to walk as the friction between our shoes and the ground prevents us from slipping down.

– It helps in lighting up a match.

– It enables us to control the car speed and to change the car direction.

3. (A) 1. (✓)

2. (✓)

3. (✗) .... few salt.

4. (✗) .... clay soil.

5. (✗) .... of sand soil ....

(B) 1. To decrease the surface area, so the water resistance decreases and the speed increases.

2. To allow the blood to pass from the atrium to the ventricle and not in the opposite direction.

3. Because the sweat consists of some excess salts and excess water.

4. (A) 1. c. wall

2. c. Urinary bladder

3. a. Roots

(B) 1. c

2. b

3. a

24

## Luxor Governorate

1. 1. two

3. Roots of plants

2. abdominal

4. opposite

2.

1. Air resistance.

3. Plasma.

5. Humus.

2. The soil.

4. Ureter.

6. Red blood cells.

3.

1. a. decreases.

3. c. both of them.

5. b. humus.

7. c. Clay

2. c. lungs.

4. c. fist.

6. b. urethra.

4.

(A) 1. (✓)

2. (✗)

3. (✓)

4. (✗)

(B) 1. To decrease the surface area, so the air resistance decreases and the speed increases.

2. To prevent the mixing of blood in the two sides of the heart.

3. Because it rarely contains humus.

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## South Sinai Governorate

1.

(A) 1. Blood platelets

2. Kidneys

3. Roots

4. friction

5. Artery

(B) Eat healthy and balanced food that is low in fat and salt.

2.

(A) 1. The soil.

2. Heart.

3. Air resistance.

4. Ureter.

(B) 1. b

2. a

3.

(A) 1. c. skin.

2. b. Blood capillaries

3. b. increases

4. c. Humus

(B) 1. To allow the blood to pass from the atrium to the ventricle and not in the opposite direction.

2. Because secreting sweat increases in summer due to the high temperature.

4.

(A) 1. (✓)

2. (✗)

3. (✓)

4. (✗)

5. (✗)

(B) ① Kidney.

② Ureter.

③ Urinary bladder.